

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2297.—Vol. XLIX.

LONDON, SATURDAY, AUGUST 30, 1879.

WITH [SUPPLEMENT.] PRICE SIXPENCE PER ANNUM, BY POST, £1 4s.

**MR. JAMES H. CROFTS, STOCK AND SHARE BROKER**  
AND MINING SHARE DEALER,  
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.  
ESTABLISHED 1842.

BUSINESS transacted in all descriptions of MINING Stocks and Shares (British and Foreign), Consols, Bonds (Foreign and Colonial), Railways, Insurance, Assurance, Telegraph, Tramway, Shipping, Canal, Gas, Water, and Dock Shares, and all Miscellaneous Shares.  
BUSINESS negotiated in Stocks and Shares not having a general market value.  
Every Friday a general and reliable List issued (a copy of which will be forwarded regularly on application), containing closing prices of the week.

**MINES INSPECTED.**  
BANKERS: CITY BANK, LONDON; SOUTH CORNWALL BANK, ST. AUSTELL.

**SPECIAL DEALINGS in the following, or part:—**  
10 Cambrian, offer wtd. 10 Leadhills, £2 2s. 6d. 5 Santa Barbara, £1 17 6  
20 Colorado, £1 12s. 6d. 5 Llanidloes, 10s. 10 Tankerville, £2 3 4  
10 Cwm Brynno, 21s. 10 Red Rock, 7s. 6d. 30 Van Consois and Glyn  
25 East Van, £1 5s. 25 Morfa Du, 16s. 6d. Amalgamated, 4s.  
10 Eberhardt, £2 3 4. 25 Pestarena, 4s. 10 W. Assheton, 17s. 6d.  
25 Frontino, £2 3 4. 25 Parys Corporation, 10 Wye Valley, 12s. 6d.  
25 Herodfoot, £2 3 4. 10s. 6d. 10 West Chiverton, all  
10 Javali, 7s. 6d. 150 Penstrulhal, 1s. 3d. calls paid, £2.  
10 Richmond, £7 12s. 6d.

\* SHARES SOLD FOR FORWARD DELIVERY (ONE, TWO, OR THREE MONTHS ON DEPOSIT OF TWENTY PER CENT).

**RAILWAYS—SPECIAL BUSINESS.**  
**FOREIGN BONDS—SPECIAL BUSINESS.**  
Fortnightly accounts opened on receipt of the usual cover.

**JAMES H. CROFTS, 1, FINCH LANE LONDON.**  
ESTABLISHED 1842.

**MR. W. H. BUMPUS, STOCK AND SHARE BROKER,**  
AND  
MINING SHARE DEALER,  
44, THREADNEEDLE STREET, LONDON, E.C.  
ESTABLISHED 1867.

BUSINESS transacted in STOCK EXCHANGE SECURITIES and MISCELLANEOUS SHARES of every description.  
RAILWAYS, BANKS, FOREIGN and COLONIAL BONDS, TRAMWAYS, TELEGRAPHS, and all the LEADING INVESTMENTS.  
Accounts opened for the Fortnightly Settlement.  
A Stock and Share List free on application.

Mr. BUMPUS has SPECIAL BUSINESS in the undermentioned:—

10 Abelllyn, 5 St. Laxey, £16 3 4.	100 Rookhope, 4s. 6d.
100 Almada, 6s. 9d.	50 Ruby & Dunderberg, £1 16s.
50 Bodidris, 25 Herodfoot, £2 3 4.	15 Rhydalun, £11.
40 Blue Tent, £2.	10 Roman Grav., £8 3 4.
35 Colorado, 32s.	20 So. Frances, £7 3 4.
10 Cape Copper, £2 3 4.	10 So. Condurow, £11 3 4.
25 Chapel House, 40 Santa Barbara, 37s. 6d.	20 Tankerville, £2 3 4.
3 Carr Brea, £2 3 4.	5 Tincroft, £2 3 4.
50 Canada Gold, 60 Morfa Du, 16s. 6d.	100 Tamar Silver-Lead, 10s. 6d.
10 Chontales, 5s. 6d.	10 Van, £18 3 4.
40 Cwm Brynno, 20 Malleur, £3 8s. 9d.	25 Wheal Grenville, £4 3 4.
75 Don Pedro, 12s.	150 Nouveau Monde, 15s. 6d.
20 Devon Consols, £2.	15 Wh. Peavor, £10 3 4.
2 Dolcoath, £2 3 4.	50 West Chiverton, 30 West Holway, 11s.
10 Eberhardt, £2 3 4.	50 Parys Copper, 11s.
10 East Pool, £13 3 4.	100 Port Phillip, 9s. 6d.
25 East Van, 20s. 6d.	150 Pestarena, 4s. 6d.
50 East Caradon, 9s. 6d.	40 Paudora, 25 West Peavor, £2 3 4.
25 Frontino, £2 2s.	20 Richmond, £7 3 4.

**SPECIAL BUSINESS, at close prices, in the SHARES of all the principal HOME and FOREIGN MINES.**

A complete and reliable List of all the Leading Investments (published on the first of each month) may be obtained free on application to

**WILLIAM HENRY BUMPUS, SWORN BROKER.**  
Offices: 44, Threadneedle Street, London, E.C.  
BANKERS—THE NATIONAL PROVINCIAL BANK OF ENGLAND, E.C.

**MESSRS. JONES AND HOUSTON, 25, CROSBY HALL CHAMBERS, LONDON, E.C.**  
STOCK AND SHARE DEALERS AND GENERAL MINING AGENTS.

**SPECIAL BUSINESS in the following Shares, which we can honestly and boldly recommend either to hold for dividends or a great rise in market value:—**  
BRYN GLAS. RHYDALUN.  
DON PEDRO. SENTIN.

We strongly recommended in last week's Journal the immediate purchase of DON PEDRO and BRYN GLAS. The former have had a considerable rise, and will no doubt go to double their present price immediately, and the latter is considered to be one of the best mining investments of the day. An important fresh discovery has just been made at the Pant-y-Mwyn Mine.  
Bankers: London and Provincial.

**MR. E. J. BARTLETT, BRITISH AND FOREIGN STOCK AND SHARE DEALER,**  
No. 30, GREAT ST. HELEN'S, LONDON, E.C.

Just out,  
"HOW TO INVEST," post free, One Shilling, Twelfth Edition, enlarged.

**WILLIAM GABBOTT, STOCK AND SHARE DEALER,**  
8, DRAPER'S GARDENS, LONDON, E.C.  
Bankers: The National Provincial Bank of England.

**NOTICE OF REMOVAL.**

**MR. THOMAS THOMPSON, JUN., STOCK BROKER,**  
has REMOVED from 1, Palmerston Buildings, Bishopsgate-street, to 16, ST. SWITHIN'S LANE, E.C.

Mr. THOMPSON transacts business in every species of Stock Exchange and Mining Securities.  
Mr. THOMPSON affords reliable information to investors, and can give, when desired, a list of first-class Stocks and Shares, yielding 4 to 10 per cent. dividends upon present prices.  
Mr. THOMPSON's weekly Circular may be had on application.

**MR. JOHN BATTERS, STOCK AND SHARE DEALER,**  
transacts Business in Stock Exchange and Mining Securities.  
Special information to Investors in Lead Mines, also in Swedish, Canadian, and other securities.  
4, AUSTINFRIARS, LONDON, E.C.

**MR. T. E. W. THOMAS, STOCK AND SHARE DEALER,**  
3, GREAT WINCHESTER STREET, E.C.

**SPECIAL BUSINESS in the following:—**  
25 Cwm Brynno, 15 St. Holway, £5 fully paid  
40 Chapel House, £1 2 4  
50 Don Pedro, 11s. 3d.  
5 East Van, 17s. 6d.  
5 East Lovell, £1 3 4.  
25 Flagaft, 4s.  
10 Glyn and Van Consois, 11s. 3d.  
70 Glyn and Van Consois, United, 9s.  
50 Herodfoot, £2 1s. 3d.  
20 Huitfall, £1 5s.  
25 Leadhills, £2 3s. 9d.  
50 Morfa Du, 15s. 6d.  
10 Parys Corporation, 11s. 3d.  
10 St. Harmon.  
40 Tamar Silver-Lead.  
20 West Peavor, £2 1s. 3d.

DON PEDRO recommended for a rise.

### HOME MINES—LEAD, TIN, AND COPPER.

BRITISH LEAD, TIN, and COPPER, having been lower in price than ever known, it is at last satisfactory to observe an upward tendency. The general feeling is that these METALS will now continue to rise in price.

Most of our HOME leading DIVIDEND and PROGRESSIVE LEAD, COPPER, and TIN MINE SHARES are now at a mere NOMINAL figure, and we strongly recommend an immediate purchase in many of them. A List of which can be had on application.

Messrs. PETER WATSON AND CO.,  
54, OLD BROAD STREET, LONDON, E.C.

### UNITED STATES AND COLONIAL MINES.

IMPORTANT INFORMATION REGARDING THE ABOVE.  
BUYER and SELLER of SHARES at the close Market Price of the day. SHAREHOLDERS and INVESTORS may rely on all business being punctually and faithfully carried out.

A DAILY LIST OF PRICES sent (free) on application, either personally or by post. BANKERS: THE ALLIANCE BANK (Limited).  
Messrs. PETER WATSON AND CO.,  
54, OLD BROAD STREET, LONDON, E.C.

### BRITISH AND FOREIGN MINES.

SHAREHOLDERS and INVESTORS desirous of PURCHASING or SELLING SHARES in COPPER, TIN, LEAD, GOLD, or SILVER MINES can do so at market prices, and obtain information regarding the same on personal application, or by letter, of—  
Messrs. PETER WATSON AND CO.,  
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Telegraphic Messages punctually attended to.

### STOCK AND SHARE MARKETS.

Prices of STOCKS and SHARES in RAILWAYS, BANKS, ENGLISH and FOREIGN GOVERNMENT SECURITIES, GAS, MINES, INSURANCE, and other Stock Exchange Securities, and various important information telegraphed instantaneous from the STOCK AND SHARE MARKETS direct into the offices of—  
Messrs. PETER WATSON AND CO.,  
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From 11 A.M. to 4 P.M. (Saturdays 11 A.M. to 3 P.M.) for the information of customers.

### FORTUNES IN MINES—For INVESTORS with £2000 to £10,000 capital.

PROFITS, ONE HUNDRED TO FIVE HUNDRED per cent. in MINES. For INVESTORS with capital of £10 to any amount.

For advice, apply at once to—  
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STOCK AND SHARE DEALER,  
76, OLD BROAD STREET, LONDON.

(ESTABLISHED 1853.)  
N.B.—New correspondents must enclose stamps or P.O.O., 10s. 6d., free for reply, which will be allowed if business results.

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**MR. JAMES STOCKER, STOCKBROKER,**  
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(Established 1848.)  
SPECIAL BUSINESS in BRITISH and FOREIGN MINES.  
BANKERS: LONDON and WESTMINSTER.

**FERDINAND R. KIRK, 5, BIRCHIN LANE, LONDON, E.C.**

FORTNIGHTLY ACCOUNTS opened, on receipt of the usual "cover," in Railways Home and Foreign, Mining Shares, Foreign Bonds, and certain Miscellaneous Securities.

"THE WEEK"—A SEPARATE EDITION from that which appears in the Mining Journal is published every Wednesday evening, containing "Notes and Hints on the Stock Markets," with Closing Prices. May be had on application. Bankers: London and Westminster, Lothbury.

**MR. W. MARLBOROUGH, STOCK AND SHARE DEALER,**  
29, BISHOPSGATE STREET, LONDON, E.C.  
(Established 24 Years.)

Can SELL the following SHARES at prices annexed:—  
75 Almada, 7s. 30 East Caradon, 9s. 100 Parys Corporation, 10s. 6d.  
50 Chontales, 5s. 6d. 150 N. Zealand Kapanga, 10s. 3d.  
20 Eberhardt, £2 3 4. 4s. 6d. 50 Yorke Peninsula pref., 10s. 3d.  
20 East Lovell, 40s. 100 Pestarena, 4s. 9d. 60 Tamar Silver-Lead, 10s. 3d.  
25 Flagaft, 5s. 25 Morfa Du, 16s. 100 ditto ordin., 3s. 3d.  
25 Leadhills, £2 3 4. 10 Richmond, £7 3 4. 60 Tamar Silver-Lead, 10s. 3d.  
25 Herodfoot, £2 5s. 6d. 10 Hornachos, 47. 10 Tankerville, £3 4s.  
20 Nouveau Monde, 16s. 25 South Darven, 27s. 50 Victoria (London) Mining Co., 9s. 3d.  
20 Great Holway, 5 Van, £15 3 4. 20 Wheal Crebur, 2s.  
50 Don Pedro, 12s. 3d. 10 Miners, £8 3 4.

**MESSRS. J. TAYLOR AND CO.,**  
MINING ENGINEERS AND INSPECTORS,  
88, LONDON WALL, LONDON, E.C.,  
Have Agents in England, Scotland, Wales, and on the Continent.

**MESSRS. ENDEAN AND CO., 85, GRACECHURCH STREET LONDON, E.C., STOCK AND SHARE DEALERS.**  
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**MR. JOHN L. M. FRASER**  
(Fourteen years at the Great Miners' Mines),  
CONSULTING MINING ENGINEER—SECRETARY AND AUDITOR—ROYALTY AND MINERAL ESTATE AGENT—SHAREDEALER.  
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The most reliable information concerning certain rich Lead and Blende Mines that will soon double their present prices. Full particulars on application. Parties requiring valuable Mine and Colliery Leases should apply at once, as they are rapidly rising in value. All descriptions of Mining Machinery at low prices.

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Investigations, Reports, and Valuations made of Coal, Iron, Slate, Pyrites, and other properties at home and abroad. Enquiries for Road and Railway Materials, Mining Plant, Pipes, Castings, &c. Plans, &c. of the most modern and economical mining appliances, fittings, and arrangements.  
I have been long acquainted with the principal Coal and Ironworks in the North, with the Slate Quarries in North Wales, and for many years was Chief Engineer of the Tamar Mines, Works, and Railway in Spain.

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"HOW TO TAKE ADVANTAGE OF THE COMING RISE IN PRICES."  
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Will be forwarded to Investors upon application.

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**JOHN B. REYNOLDS, 37, WALBROOK, LONDON, E.C.**

Business transacted in all kinds of Stocks and Shares at net prices—prompt cash.  
Mr. R. points with satisfaction to his recommendation of WHEAL PEVOR shares at £2 per share, and has special information respecting this mine and WEST PEVOR. (Established Twenty Years.)  
Bankers—London and South-Western Bank (Limited).

**FOR SALE, the WHOLE or PART:—**  
100 Crebur. 3 West Chiverton. 50 Leadhills.  
5 D'Essey Mountain. 20 Hornachos. 20 East Caradon.  
50 Herodfoot. 20 South Frances.

Address, H. WILKINS and Co., 3, Heybourne Villas, Tottenham.

**TAMAR SILVER-LEAD AND FLUOR-SPAR MINE.**  
I am still a BUYER of SEVEN HUNDRED AND FIFTY SHARES in the above. State lowest price.  
Address, J. WILSON, 7, Cumberland-terrace, Finsbury Park, London, N.

**TIN SHARES—FOR SALE:—**  
10 SOUTH CONDUROW ..... £11 10 6  
11 SOUTH FRANCES ..... £18 6 ex div.  
Address, Mr. WOODWARD, Mining Offices, Truro.

**FOR SALE, a FIRST-CLASS SECOND-HAND 80 in. CORNISH PUMPING ENGINE, with several 11 ton BOILERS.**  
Apply, WM. BENNETTS, Roskear, Camborne.

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**WANTED.—A MINING ENGINEER, who is engaged in CARRYING OUT SOME CONTRACTS, including the SINKING of some DEEP SHAFTS, is desirous to OBTAIN THE ASSISTANCE OF A PARTNER or PARTNERS, to JOIN HIM in this business, and other work of similar character.**  
Address, with particulars as to capital available, &c., to WM. RAYMOND, Contractor, care of May's Advertising Offices, 159, Piccadilly.

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Sales and Purchase of Minerals and Metals arranged. Assays and Analyses carefully conducted. References given.

**MESSRS. D. C. DAVIES, F.G.S., AND SON, MINING GEOLOGISTS, ENGINEERS, AND SURVEYORS, O-SWESTRY, in that they UNDERTAKE THE FOLLOWING DUTIES in connection with Metalliferous Mines, Collieries, Slate and other Quarries, Mining Plant and Mineral Properties generally, at home and abroad.**  
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N.B.—Responsible parties in England and Scotland, desiring agencies there, paid by commission, will be supplied with pamphlets and maps, list, and cost of farms, town properties, mineral lands, and manufacturing and other industries now offering, on applying with references as above.

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BRITISH, PRUSSIAN, & SAXON  
GOVERNMENTS.



**SUPERIOR AIR COMPRESSORS.**  
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PARIS,  
BRONZE MEDAL, 1875.



ORDER OF THE CROWN OF PRUSSIA.



FALMOUTH,  
SILVER MEDAL, 1867.

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the Geographical Congress, Paris, 1875—M. Favre, Contractor, having exhibited the McKean Drill alone as the MODEL BORING MACHINE for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

## THE MCKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecutive weeks, ending February 7, was 24'90, 27'60, 24'80, 26'10, 28'30, 27'10, 28'40, 28'70 metres. Total advance of south heading during January was 121'30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tunnel, the McKean Rock Drill continued to work until the pressure was reduced to one-half atmosphere (7½ lbs.), showing almost the entire motive force to be available for the blow against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these Machines for the SEVERN TUNNEL; the LONDON AND NORTH-WESTERN RAILWAY for the FESTINIOG TUNNEL; and the BRITISH GOVERNMENT for several Public Works. A considerable number of Mining Companies are now using them. Shafts and Galleries are driven at from three to six times the speed of hand labour, according to the size and number of machines employed, and with important saving in cost. The ratio of advantage over hand labour is greatest where the rock is hardest.

These Machines possess many advantages, which give them a value unapproached by any other system of Boring Machine.

THE MCKEAN ROCK DRILL IS ATTAINING GENERAL USE THROUGHOUT THE WORLD FOR MINING, TUNNELLING, QUARRYING, AND SUB-MARINE BORING.

The MCKEAN ROCK DRILLS are the most powerful—the most portable—the most durable—the most compact—of the best mechanical device. They contain the fewest parts—have no weak parts—act without SHOCK upon any of the operating parts—work with a lower pressure than any other Rock Drill—may be worked at a higher pressure than any other—may be run with safety to FIFTEEN HUNDRED STROKES PER MINUTE—do not require a mechanic to work them—are the smallest, shortest, and lightest of all machines—will give the longest feed without change of tool—work with long or short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or open work. Their working parts are best protected against grit and accidents. The various methods of mounting them are the most efficient.

N.B.—Correspondents should state particulars as to character of work in hand in writing us for information, on receipt of which a special definite answer, with reference to our full illustrated catalogue, will be sent.

PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL, IRON, AND FLEXIBLE TUBING.

The McKean Drill may be seen in operation daily in London.

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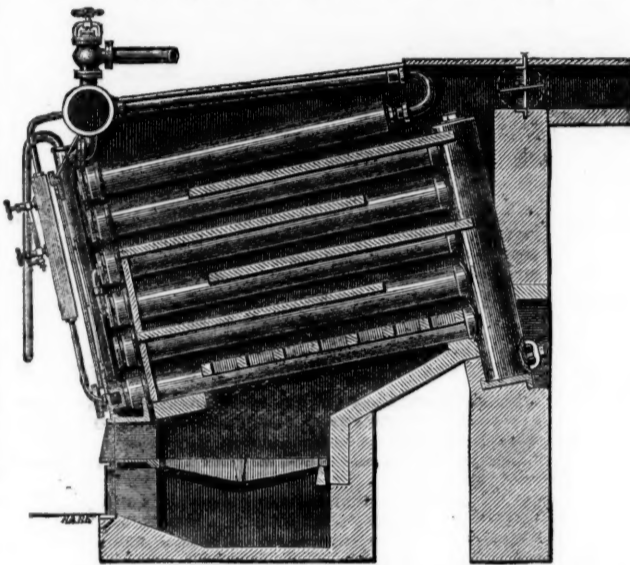
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**MINING MADE EASY—POWER without DANGER.**

**The Liverpool Cotton Powder and Ammunition Company's  
SAFETY COTTON BLASTING POWDER**

Is the SAFEST, STRONGEST, and most ECONOMICAL in WORKING of all EXPLOSIVES. The MINERS, AFTER a shot is fired, can IMMEDIATELY re-commence work. Absolutely SAFE in TRANSIT by boat or rail. PAR EXCELLENCE in every description of MINING, QUARRYING, TUNNELLING, EXCAVATING and SUBMARINE operations. Entirely free from Nitroglycerine.

Offices: 39, OLD HALL STREET, LIVERPOOL.

Works: MELLING, near LIVERPOOL.

AGENTS.—The Company have a few VACANCIES in the chief Mining Districts for really good and thoroughly PRACTICAL MEN. Apply to the Secretary, DAVID ANDERSON, personally, or by letter, at the Offices of the Company.

## WILLIAM EDWARDS AND SON, Griffin Works, Wolverhampton,

MANUFACTURERS OF

EDGE TOOLS, SPADES AND SHOVELS. HAND, SLEDGE, STONE QUARRY, AND MINING HAMMERS, RAILWAY CONTRACTORS' AND MINING TOOLS. AXES, ADZES, PICKAXES, CROW AND BORING BARS, WROUGHT-IRON WHEELBARROWS.

THE ORIGINAL AND ONLY MANUFACTURERS OF BEST CROWN QUALITY OF HORSE SHOES. PATENTEES AND MANUFACTURERS OF PATENT PUNCHED EYE PICKAXES, HOES, HAMMERS, ADZES, AND OTHER TOOLS. Under Patent No. 4698.

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES.\*—No. CXXVIII

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SECTION IV.

CROSS STOPPING.

When the lode is of a comparatively broken or loose character it is usual to commence the working away of the lode by driving a stope from 6 to 8 ft. in width and 6 ft. in height across the lode to the hanging-wall, the sides, roof, and floor being timbered as the stope advances. A second stope is driven at a distance of 1 or 3 stope widths (i.e., 2 x 6 or 8 ft., or 4 x 6 or 8 ft., centre to centre) apart from the first, and likewise timbered. According to the demand and the advance of the level several stopes may be thus driven simultaneously, but at the above mentioned distances. When these stopes have reached to the hanging-wall they are carefully packed with attle, during which the timber is generally recovered from the roof and sides. Not only are the roof and sides timbered, but the floor is also covered with lagging boards so as to form the roof when approached from the level below in the last worked stage, and hence it is that this is left when the stope is packed with attle. The stages are worked out upwards. When these stopes have been finished and packed, according as the stopes have been driven at distances of 1 or 3 stope widths apart, the single stope left, or the two stopes adjoining the already worked out portion are next driven forward to the hanging wall, being timbered during the advance, and afterwards carefully packed, and the timber recovered. There will be now, when the first stopes are driven 3 stope widths apart, a centre stope, which is got out in the same way. The succession of stopes as they are opened out and worked away would be well illustrated by supposing a length of lode, of 240 ft. in the direction of the strike of the lode, to be got out in this manner by 8 ft. stopes, which will require 30 stopes (i.e., 30 x 8 ft.) for the full length of 240 ft. Suppose, moreover, that it is desired to keep 4 stopes working at once, and consequently that whenever a stope has advanced one-quarter the distance of its full length (i.e., one-quarter the width of the lode), that another stope is commenced, and that the stopes widths are numbered successively from 1 to 30, then the stopes are commenced in the following order, when the second driven stope is 3 stope widths apart from the first:—

Nos. 1 5 9 13  
2 4 6 8  
17 21 3 7  
10 12 14 16  
25 29 11 15  
18 20 22 24  
19 23 26 28

Thus, No. 2 will be commenced when No. 1 is finished, 4 when 5 is finished, 6 when 9 is finished, 8 when 13 is finished, 17 when 2 is finished, 27 when 4 is finished, 3 when 6 is finished, and so on. When the second driven stope is only 1 stope width apart from the first, the order of succession in commencing the stopes would be:—

Nos. 1 3 5 7  
9 2 4 6  
8 11 13 15  
17 10 12 14, &c.

From the above it will be noticed that during the whole time a stope is being driven the two adjoining stopes are either both not commenced or both completed (i.e., packed), or one is not commenced and the other is completed; or more simply, no two adjoining stopes are driven simultaneously. In this manner the whole width of the lode for any given limit of length is worked out to the height of one stope; and, technically speaking, the first stage is thus worked out.

When the first stage is thus completed the second is commenced by putting up a rise from the level near where it meets the cross-drift from the shaft to the height of the second stage, and from this rise the lode is taken down above the level of the same height, and for a sufficient length in advance of the working away of the stopes. The lower level is filled up with the attle obtained by taking down the lode above the level, so that the floor of this second level (which coincides with the roof of the first) is formed of attle packing. The first level is, however, kept open in the neighbourhood of the cross-drift from the shaft, and is kept connected with the level above by means of a "pass" formed in the attle packing. This second stage is worked away by stopes in exactly the same manner as the first, when a third stage is opened out by putting up a rise from the second, and the lode is taken down above the second level to form a third level for the conveyance of the ore from the stopes in the third stage to the pass or winze, which is carried up to meet this third level, the timber from the second level being removed to serve for the third level, and the second level being packed up with attle. The level is thus removed gradually higher and higher as the various stages are worked out until the whole height (20 fms.) between the two cross-cuts from the shaft is worked out. In working out the last stage, the lagging boards put down in the next stage above, forming the first stage of the division above, serve as a roof, though it is often necessary to resort to spilling in working out the last stage. As this method of working requires that the whole of the space excavated shall be packed with attle, &c., it is often necessary to introduce packing material from the surface or from a self-acting quarry worked in the country rock, as previously described.

The calamine deposits of the Altenberg, near Aix-la-Chapelle, which are mostly contact deposits, are worked out by cross stopping. The deposit is reached by means of cross-cuts from a shaft sunk on the lying side of the deposit. The cross-cuts are driven from the shaft every 14 yards in depth, and are continued through the deposit to reach the opposite (hanging) side of the deposit. A main level is driven parallel to the general strike of the deposit for the full length outside the deposit, and two other levels are driven in the deposit close to the hanging and lying side of the deposit. These levels are connected every 20 to 40 yards by means of cross-cuts driven at right angles to the strike from the main level to the hanging-wall. The levels and cross-cuts are driven 6 ft. high by 4 ft. 6 in. wide. The cross-cuts divide the deposit into five divisions. A "pass" is put down in the deposit close to the lying wall, and in the middle of each division from the upper stage or level to the lower level. These passes are used for introducing stones, &c., into the stopes for packing. The working away of the deposit is then begun at the corners where the level driven on the lying side crosses the cross-cuts. A stope, 2 yards in height and 4½ ft. wide, is then driven from each corner in the direction of the strike towards the centre of each division. When this first stope has advanced 2 yards a second stope next to it, 4½ ft. in width, is commenced and driven forward in the same direction. When this second stope has advanced 2 yards and the first stope 4 yards, a third stope, 4½ ft. wide, is commenced, and so on. In this manner the workings when looked at in the plan assume the step-like arrangement characteristic of stopping. Each of the five divisions into which the deposit is divided is thus worked out from the two corners on the lying side towards the centre and the hanging-wall. When the second stope has advanced 2 yards the space which has been excavated is packed; for this purpose two dry walls of attle packing are built—one to form one side of the cross-cut, and the other carried diagonally (i.e., parallel to the general line of the stopping), the space behind including the level next the lying wall being filled with attle packing. As the working away of the stopes advances a second diagonal dry wall is built 4½ ft. from and parallel to the first, and the wall forming the side of the cross-cut is prolonged, the space behind being packed tight up to the roof. In this manner the first stage (2 yards in height) is worked away, and the empty space filled with attle packing. When this first stage has been worked away the

second is commenced by putting up a rise 2 yards in height from the cross-cut and near to the lying wall, but in the country rock. From this rise the cross-cut is taken down a height of 2 yards, and levels 2 yards in height are driven right and left from the cross-cut in the deposit in the direction of the strike close to the hanging and lying walls. The lower 2 yards in height of the cross-cut between the two pack walls is built up tight with attle packing, which serves as a floor for the cross cut for the second stage. The divisions in this second stage are stope out in the same manner as those of the first, beginning at the corners next the lying wall. In a similar manner, by putting the rise up another 2 yards, a third stage is opened out and stope away, and so on with the fourth, fifth, sixth, and seventh stages, when the whole of the deposit will have been worked out to the level above. In working out the seventh stage the roof will be formed of the attle packing of the first stage worked away from the level above; it will, therefore, be necessary to resort to spilling (timbering) to keep up the roof. The winzes down which the ore is sent to the cross cut from the shaft, or from the main level in the country rock, are formed by the rises put up from the cross-cuts in the country rock close to the lying wall of the deposit.

A modification of cross stopping is still practised in some parts of the Schemnitz district,\* where the workings are in a deposit, the chief matrix of which is formed of decomposed quartz. The deposit is opened out by levels 10 fms. vertically apart, driven partly in the deposit and partly in the country rock on the hanging side. From these levels stopes 7 ft. wide and about 6 ft. in height are driven every 14 ft. apart, centre to centre, across the deposit to the lying side, thus leaving between them a pillar of the same width (7 ft.) as the stopes. The spaces excavated by the stopes are filled with attle packing, after which the pillars left are worked away. When the first stage of 6 ft. in height has thus been worked out, the second stage is commenced and worked out in the same way by putting up a rise and driving a second level above the first in the deposit close to the hanging wall. Since the inclination of the deposit is too slight for the formation of a pass or "rolle," a blind shaft or pass is driven in the country rock at a sufficiently steep inclination to serve as a pass for the ore, the lower part coming into the level below, the upper end being connected with the level above by means of a short cross-cut driven in the country rock on the hanging side.

When the deposit is of extra thickness it is sometimes opened out by driving a level or a pair of levels from the cross-cuts in the middle of the deposit parallel to the general strike, instead of near the hanging and lying walls, as in the cases above cited. From these levels the deposit may be at once worked out by driving stopes to the hanging and lying walls, leaving pillars between, as we have just described is the case in the Schemnitz deposit, or by giving the stopes a step-like arrangement, as we have above described in the case of working the calamine deposit at Altenberg, near Aix-la-Chapelle; or lastly, the stopes may be driven (leaving between them solid pillars to be got afterwards) in the direction of the strike from cross-cuts.

A NEW PROCESS IN METALLURGY.

[A paper read before the British Association at Sheffield, Aug. 22, by Mr. JOHN HOLLWAY.]

The theory of this process has been developed from known principles, aided by experimental work undertaken for the purpose of investigating the action of rapid oxidation upon pyritic substances, with a view to their metallurgical treatment upon a large scale. Before these experiments were made metallurgists had not realised the fact that pyrites and other sulphides (even with the addition of a considerable proportion of incombustible materials) can be decomposed and fused by the heat developed in the oxidation which takes place whenever air is rapidly brought into contact with an excess of molten sulphides. When this is effected by introducing air under pressure through apertures of a few millimetres in diameter in the bottom of a hearth upon which the molten sulphides lie, the results produced are very remarkable. Thus when cupreous pyrites was so treated, a true combustion of the more oxidisable constituents took place, flame and incandescence resulted, and the decomposition was effected with great rapidity.

It was primarily surmised that in this manner, neglecting the influence of mass, the elements would be burnt in the regular order of their relative affinities for oxygen, and that the second atom of sulphur in iron pyrites, which can be expelled by fusion, would escape oxidation in the molten bath, and be volatilised in the current of sulphurous acid and nitrogen emerging from the surface of the molten liquid. The more volatile oxides and sulphides in the material operated upon, such as those of arsenic, antimony, lead, and zinc, would volatilise with this freed sulphur, and condense partly before it, though more or less contaminating that product. If the oxidation be arrested at a point determinable by practice, calculation, or some marked change in the spectrum, two products of different specific gravity will be obtained—namely, a slag of silicate of iron, lime, alumina, &c., containing the iron protoxide resulting from the oxidation of the iron sulphide, combined as silicate, with the siliceous fluxing materials present in the bath; and underneath this, the regulus or remaining unburnt sulphides, containing in an approximately known state of concentration the more valuable metals derived from the metalliferous substances operated upon. It was, however, necessary for the practical application of the theory that sufficient heat should be developed during the combustion of the iron, zinc, or other less valuable sulphides, to keep the materials molten during the operation. The temperatures of combustion of various sulphides, calculated from known data, approached the maximum temperature attainable by the combustion of coal, and this inspired a considerable amount of confidence. In the case of iron pyrites these calculations are only rough approximations, as the latent heat of sulphur vapour is not known. It was found that when thus treating cupreous pyrites, the order in which the elements became oxidised was as follows:—

I. Zinc and iron. II. Sulphur. III. Lead and copper.

The above reactions find a parallel in the elimination of the metalloids from cast-iron by Bessemer's process, in which silicon and carbon and then phosphorus and manganese are successively burnt out of the crude metal. Parallel analogies also exist between the processes of puddling and English copper smelting; where the oxidation proceeds but slowly, and the necessary heat is obtained by the burning of coal.

The foregoing conclusions have been verified experimentally; full particulars thereof will be found in papers brought before the Society of Arts, February 12 and April 30 of this year. Without recording the crucible experiments I will proceed to describe briefly those made at Penistone and Sheffield. In the former place, ordinary Bessemer converters were used, as they were the only existing plant available, but it was from the first contemplated that a very different description of furnace would be requisite. The first of these experiments was made on the night of July 10 of last year, at Messrs. Charles Cammells' Penistone Works. The pyrites employed contained about 2½ per cent. copper, 1.5 ozs. silver, and approximately 3 grs. of gold per ton. About six tons of this mineral was melted in a cupola furnace, and the resulting protosulphides run into a converter. In this instance no siliceous fluxes were added, the requisite silica being obtained from the gannister lining. The blast of air was at a pressure of from 15 to 20 lbs. The temperature gradually but steadily increased; a flame burnt continuously at the mouth of the vessel, where after about twenty minutes blow a pyrometer marked 1000° C., and wrought-iron melted in the incandescent sulphur vapour. The contents of the vessel were now very liquid, and at this period the protoxide of iron appears to have become converted into silicate as soon as it was formed. After thirty minutes blow the siliceous lining gave way at a weak place, cut through by the protoxide of iron, and a thin stream of very hot and liquid slag poured into the pit below. The converter was therefore emptied. The slag, consisting of ortho-silicate of iron, 2 Fe O 81 O<sup>2</sup>, crystallised on cooling in large and well defined crystals above a regulus of iron and copper, the line of demarcation between the two being very distinct. If the oxidation had been continued longer a yet higher temperature would have been obtained. On the succeeding night the experiment was repeated several times, but siliceous material was thrown into the vessel during the operations, which greatly mitigated the corrosive action of the protoxide of iron on the siliceous lining. On July 17-18 further experiments were made, and valuable data obtained. The pyrites used was the same as before. Red sand was thrown into the converters.

In experiments made at the commencement of November, 1878, the blow, after having been commenced with some molten protosulphide, was continued with the addition of 4 tons of cold pyrites in large lumps, together with 9 cwt. of moist sand. When the converter became too full of material, half the charge was tipped out, and the blow was continued with the addition of 18 cwt. of pyrites and 3 cwt. of sand. On Feb. 5 last about 18 tons of raw pyrites, with sandstone, were treated continuously in this manner in one Bessemer, being converted into silicate of iron slag and a rich regulus at the rate of over 2 tons an hour. In all these experiments the blast entered cold and the gases escaped at a high temperature; sufficient quantities of siliceous fluxes were not added, and the resulting dense slag occasionally entrapped considerable quantities of copper. But in specially constructed furnaces, where the heat produced is properly taken advantage of, and possibly augmented, much larger quantities of flux can be added, which will enable a slag to be produced containing less copper than is now found in the rejected slags of the Swansea process.

Further experiments were made at Messrs. John Brown and Co.'s Atlas Works, Sheffield. A rough plant was temporarily erected by connecting several ordinary cupolas, as shown in the diagram, one of which was provided with a Bessemer hearth. The sulphur and sublimate were condensed in the second and third cupolas. A large portion of the theoretical yield of sulphur was thus obtained, notwithstanding the imperfect appliances used. Slag and regulus were produced as before, and it was evident that the process could be carried on continuously. These experiments were not continued for any length of time, partly owing to the faulty construction of the forepart of the furnace, and partly to the irregular manner in which the materials were introduced.

The spectroscopic observations taken by Dr. W. M. Watts during the course of these experiments were valuable and interesting, and I am indebted to him for the following information:—

In the experiments at Penistone two spectra were observed; the first, that given by the flame from the charging door of the cupola in which the pyrites was melted; the second, produced by the blast of air through the molten protosulphide in the converter. The cupola-spectrum was shown by direct comparison with the spectrum of a flame coloured by lead chloride to be mainly due to oxide of lead, but contained besides some few of the lines which appear to be proper to the converter spectrum. Analysis showed that the lead present in the ore was almost entirely volatilised during the preliminary melting of the ore, the molten protosulphide charged into the converter containing only 0.8 per cent. lead. The converter flame gives a brilliant spectrum extending from the lithium line somewhat beyond the thallium line, which is usually present. Its most marked feature is the presence of four bright red lines about equally spaced between the sodium and lithium lines. Their wave lengths, as far as at present known, are approximately 599, 6151, 6320, and 6465, besides a fainter line at 6113. These lines are not those of any known spectrum. The way in which the flame is obtained suggests the theory that they are sulphur lines. When sulphur is burned in air or oxygen the spectrum obtained is entirely continuous, and even if air be bubbled through boiling sulphur no lines are obtained. Two spectra of sulphur obtained by the electric discharge through a vacuum tube containing vapour of sulphur have been described by Mr. H. R. Huggins, and these four red lines. The spark with a Leyden jar in a current of sulphur dioxide at the ordinary pressure yields a spectrum (at present under investigation) apparently not previously described, in which, however, the red lines are altogether different from those of the converter spectrum. The constancy with which these four red lines are associated together seems to preclude the possibility of their being due to different substances, otherwise the most refrangible line might be due to lead. No lines of copper were observed except in the fourth experiment, in which all the lines except those of sodium disappeared about six minutes before the turn down. When in this experiment, towards the end of the blow, the subsulphide of copper began to burn, a splendid emerald green flame suddenly appeared, and all the lines except those of copper and sodium left the spectrum. During the last few minutes of the blow the mouth of the converter was dull and without flame, the sulphur and oxidisable matter having been burnt out.

The pyrites, after fusion in the cupola at Penistone, gave protosulphides containing:—

	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Iron	59.93	59.93	59.93	59.93	59.93
Copper	3.62	3.62	3.62	3.62	3.62
Zinc	1.53	1.53	1.53	1.53	1.53
Manganese	0.79	0.79	0.79	0.79	0.79
Arsenic	0.08	0.08	0.08	0.08	0.08
Manganese	0.21	0.21	0.21	0.21	0.21
Alumina	0.15	0.15	0.15	0.15	0.15
Lime	0.28	0.28	0.28	0.28	0.28
Magnesia	0.27	0.27	0.27	0.27	0.27
Sulphur	33.10	33.10	33.10	33.10	33.10
Silica	0.15	0.15	0.15	0.15	0.15

Total ... 99.61 ... The products consisted in the first place of a regulus, having a greater density than ordinary copper regulus on account of the larger proportion of iron as compared with sulphur therein contained. The average specific gravity is 4.98. The following analyses illustrate the composition:—

	I.	II.	III.	V.	VI.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Iron	57.10	56.05	12.56	13.20	13.16
Copper	15.85	16.59	62.36	63.43	59.98
Zinc	0.84	0.48	0.42	—	—
Lead	0.22	0.81	0.14	—	—
Arsenic	0.22	0.03	—	—	—
Manganese	0.22	0.20	—	—	—
Alumina	0.11	0.13	—	—	—
Lime	0.34	0.16	—	—	—
Magnesia	0.34	0.25	—	—	—
Sulphur	21.98	23.47	22.22	20.37	21.94
Silica or insoluble residue	2.00	1.10	0.28	1.20	2.67
Oxygen and not estimated	0.98	1.23	3.02	1.80	2.198

Total ... 100.00 ... The slag, the second product, when produced without the use of extraneous basic flux, is a very friable, porous, normal silicate of protoxide of iron, having the formula 2 Fe O, Si O<sup>2</sup>. Sulphur sometimes replaces part of the oxygen in it. Some specimens were very finely crystallised; the specific gravity is 4.05. This slag keeps very liquid at the temperature of the operation. The following represents the normal composition when using only sand as flux, and when no precautions are taken to obtain a complete separation of the regulus from the slag:—

	I.	II.	III.	V.	VI.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Iron protoxide	53.30	54.52	59.00	61.17	67.63
Iron peroxide	3.00	3.71	—	—	—
Iron combined with sulphur	8.79	4.27	—	—	—
Copper	0.18	0.22	1.55	0.87	9.43
Lead	0.12	0.10	—	—	—
Zinc oxide	1.15	1.76	0.99	—	—
Arsenic	—	—	—	—	—
Manganese oxide	0.32	0.37	0.30	—	—
Alumina	2.15	2.09	1.08	—	2.46
Lime	0.40	0.37	0.63	0.07	—
Magnesia	0.48	0.45	—	—	—
Sulphur	3.99	2.55	6.87	1.08	2.06
Silica	29.90	30.05	29.55	26.53	26.22
Oxygen and not estimated	—	—	0.24	3.28	1.32

Total ... 100.14 ... When, however, the products are overblown the protosulphides burn to silicate of protoxide of iron, a more infusible and less dense silicate, of which the following is an analysis:—

	Per cent.
Silica	34.34
Iron protoxide	25.01 = 43.27 per cent. Fe.
Iron peroxide	33.53
Manganese protoxide	0.12
Alumina	1.81
Zinc oxide	0.78
Copper oxide	2.30 = 1.91 per cent. Cu.
Lead oxide	0.03
Lime	0.24
Magnesia	0.30
Sulphur	0.15
Arsenic	—
Phosphoric acid	0.31
Not estimated and insoluble residue	1.45

Total ... 100.52 ... The third class of these products consists of metalliferous sublimate, and of sulphur. As an example of the former the following may be quoted:—

	Per cent.
Sulphate of lead	62.98 = 50.91 per cent. Pb.
Sulphide of lead	17.29 = 17.47 per cent. Zn.
Zinc oxide	21.73 = 0.07 per cent. Cu.
Copper oxide	0.08
Lead sesquioxide	2.6
Insoluble residue	2.14
Not estimated and loss	3.78

Total ... 100.00 ... The following is an analysis by Mr. J. S. Merry, of Swansea, of the crude sulphur dried at 100° C.:—

	Per cent.
Sulphur	63.30
Silica	7.00
Iron	2.75
Arsenic	7.12
Zinc	8.95
Lead	—
Copper	—
Lime	—
Magnesia	—
Alumina	—
Oxygen (traces), carbon and loss	8.13

Total ... 100.00 ... The fourth, the gaseous product of the operation, consists mainly of sulphurous acid and nitrogen. The following are the analyses by Dr. Frankland, F.R.S.:—

	I.	II.
	Per cent.	Per cent.
Nitrogen	86.00	88.37
Sulphurous acid	14.00	10.88
Oxygen	—	0.75

Total ... 100.00 ... The principal cost of plant will be for the blast. I am indebted to Mr. W. H. Cutler, C.E., Queen Anne's Gate, Westminster, for the following information:—

"The cost of a suitable pair of air pumps to pump 2000 tons of air per month of 28 days, working day and night, or 24,000 tons of air per annum, each pump capable on emergency of pumping the required quantity of air at 10 lbs. pressure on the square inch—viz., 30½ in. diameter—with 5 ft. stroke, on strong cast-iron bed-plates, will cost 742l. 10s. The power required will be 100 horse power. The dimensions and cost of the turbine must depend on the fall of water. For example, a fall of 72 cubic feet per second for 18 ft. would drive a turbine 79 revolutions per minute, and produce 108-horse power." The cost of one of Mr. Cutler's turbines, of suitable dimensions, would be 220l. That of the furnace would not exceed 100l., and (say) 240l. for a converter for collecting the sulphur and other sublimate: 24,000 tons of air would be more than sufficient to supply the necessary oxygen to 15,000 tons of pyrites, since 1.4 part by weight of air will convert one part of ordinary cupreous pyrites into rich regulus. It, therefore, appears from the foregoing figures that where sufficient water power is available a plant capable of treating 15,000 tons of pyrites annually could be erected at a cost of about 1500l. Where, however, water power is not available steam-boilers will be requisite, and the additional cost for plant may be 500l. or, perhaps, 1000l. Messrs. Howson and Wilson estimate that compound engines of 2400 horse power, with 25 boilers of ordinary size, heated by 20,000 tons of coal, would be sufficient to supply 48,000 tons of air annually at a pressure of 17 lbs. per square inch. This quantity is more than sufficient to supply the necessary oxygen to 30,000 tons of pyrites. The same gentlemen estimate that the consumption of coal requisite to heat the blast to 1000° F. would be about 11,000 tons per annum, but this quantity will be materially decreased if the heat from the exit gases be utilised.

† Analysed by Mr. J. E. Stead. † By Mr. E. Riey. \* By Mr. A. E. Arnold.

\* Being Notes on a Course of Lectures on Mining, delivered by Herr Berggrath Dr. von Gaudonius, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

\* Lottner—Seric. Bergbaukunde, p. 332.

With regard to the furnace it is proposed to make the hearth, or rather crucible, of siliceous, aluminous, or refractory carbonaceous material. A sufficiently large proportion of siliceous flux in the furnace charge will greatly mitigate the action of the resulting iron protosulphide upon the silica of the lining. Aluminous shunk bricks answer still better. It might even be found convenient to allow considerable corrosion to the lining to take place, if the converting hearth is of such form, and the materials are of such a nature, that it can be readily and economically renewed.

It may be also advantageous to run the regulus and slag, after the desired concentration has been effected, directly on to the hearth of a reverberatory furnace, where they can be kept molten by external heat, and where a more perfect separation of the one from the other may be effected. In such a furnace the final oxidation of the rich regulus would probably be most conveniently effected, although it is, of course, possible to produce metallic copper from the regulus by the transmission of air currents in a specially constructed furnace.

Not only would antimony, lead, zinc, copper, nickel, silver, and other valuable metals be extracted from the sulphides that contain them, but also from the combustible fluxing materials that are added to the charge, and the extraction of the copper and silver and gold will probably be more complete, than by any other known process. In countries where cupreous siliceous schists and sandstones abound, the use of these siliceous fluxes would partially, if not wholly, compensate for the loss of copper in the slag. Thus, by using 0.5 ton of such material, containing 0.5 per cent. of copper for each ton of the sulphuretted ore, the whole of the copper could be recovered from the latter, assuming the slag to contain even as much as 0.2 per cent. of that metal.

The crude sulphur may be freed from the accompanying sulphide of arsenic by boiling it with milk of lime, and from the metallic oxides and sulphides with which it is contaminated by distillation; or purification by bisulphide of carbon might be resorted to. The sulphurous acid can be oxidised in chambers to sulphuric acid, either with or without previous liquification.

This process, on account of its simplicity and economy, may reasonably be expected, not only to take the place of the ordinary smelting, but also of many of the wet processes now in use.

### MINERAL STATISTICS OF THE UNITED KINGDOM FOR THE YEAR 1878.

In our last issue very complete and general summaries appeared, recording the produce of our mines and minerals in 1878, and following with details of the production of our tin and copper mines, the fluctuations in prices of these minerals and metals, and some general reference bearing on the condition of these industries during the past twenty years. We will now follow with lead, zinc, pyrites, and other minerals, making a careful examination of both production and prices during recent years.

**METALLIC LEAD, LEAD ORE, AND SILVER.**—In the year 1878 there were 378 mines in the United Kingdom selling ore, producing 77,350 tons, and yielding of metallic lead 58,020 tons, and of silver obtained from lead 397,471 ozs. The annexed summary shows the quantities and values as follows in 1878 and previous year:—

	1878.	1877.	1876.
Lead ore, Tons	77,350	80,428	80,850
Lead, Tons	58,020	57,241	61,403
Silver, Ounces	397,471	88,297	497,375
			113,950

Considering the general depression which has prevailed of late in all branches of mining the falling off is not so great. There is, however, a diminished production in 1878 of 3500 tons of ore, 3383 tons of lead, and 99,902 ozs. of silver. For some years past the prices of lead ore and of metallic lead have fallen to such an extent as to render mining unprofitable, and hence many mines have recently suspended operations until the return of prosperity to the industries of the country. This will be best understood by following for a few years the average prices per ton, giving side by side the highest and lowest prices in each of the same years of lead ore—

	1878.	1877.	1876.
Average price	£10 11 6	£13 19 0	£15 8 0
Highest ditto	14 3 0	16 9 9	19 6 6
Lowest ditto	9 3 6	12 7 2	13 7 0

The same remarks apply to the prices of metallic lead, which have been falling for some years. To ensure comparison it will be convenient to refer to the actual figures which appear below, in each of the years following:—

Description of lead.	1878.	1877.	1876.
English pig, common	£16 4 0	£20 11 3	£21 13 10
English pig (W. B.)	17 11 3	21 7 0	22 15 7
Sheet and bar	17 16 3	21 13 9	23 1 9
Patent shot	21 11 0	24 10 9	25 16 1

In the annexed statement will be found the detailed produce of the several lead mining districts in 1878:—

No. of mines.	Counties.	Lead ore.	Lead.	Silver.
		Tons a.	Tons a.	Ozs.
13	Cornwall	1,349 14	1,022 2	16,456
2	Devonshire	234 7	169 10	3,286
2	Somersetshire	539 4	318 7	1,550
168	Derbyshire	6,995 0	4,257 0	—
6	Shropshire	4,158 6	4,832 15	5,556
24	Cumberland	2,667 9	1,997 7	11,707
20	Yorkshire	5,917 17	4,306 16	7,681
30	Durham & Northumb.	16,869 0	13,190 14	58,318
1	Westmoreland	1,581 0	1,179 0	14,075
32	Cardiganshire	6,801 8	5,143 5	49,028
11	Montgomeryshire	7,096 10	5,563 18	51,457
1	Merionethshire	6 0	4 10	20
6	Denbighshire	3,137 2	2,517 15	13,593
1	Caernarvonshire	601 10	469 0	2,406
1	Brecknockshire	11 2	7 15	—
1	Glamorganshire	42 6	30 0	—
1	Pembrokeshire	610 4	462 15	3,235
1	Radnorshire	20 0	16 10	—
30	Flintshire	4,703 1	3,863 18	24,245
12	Caernarvonshire	2,144 2	1,670 4	4,392
9	Isle of Man	3,920 13	2,995 9	110,496
4	SCOTLAND	4,236 0	2,743 0	14,320
2	IRELAND	1,704 2	1,263 10	5,650

378 ... Total—United Kingdom 77,350 16 ... 58,020 0 ... 397,471

Of the more important lead mines in the kingdom those of Allendale East and West, and Weardale in Durham and Northumberland may be referred to; these in 1878 produced 4267 tons of ore, 3593 tons of lead, and 21,157 ozs. of silver; ten years ago, in 1869, the same mines yielded of ore 10,402 tons, lead 9407 tons, and silver 52,486 ozs. Another important mine in Westmoreland, the Greenside Mine, in 1878 produced of ore 1581 tons, of lead 1179 tons, and silver 14,075 ozs.; in 1869 the yield of the same mine was 2250 tons of ore, 1500 tons of lead, and 25,500 ozs. of silver. On the other hand, the Governor and Company's Mines of Teesdale and Weardale in Cumberland, which in 1878 gave 6812 tons of ore, 5110 tons of lead, and 25,500 ozs. of silver, have greatly increased their production since 1869, when the corresponding quantities were, of ore 5055 tons, lead 4108 tons, and silver 13,540 ozs. Another example of development will be found in the Van Mine, in Montgomeryshire, which in 1878 produced 5800 tons of ore, 4524 tons of lead, and 47,200 ozs. of silver; compared with 2260 tons of ore, 1718 tons of lead, and 17,176 ozs. of silver in 1869. Many other examples of the vicissitudes of mining might be referred to. The foregoing, however, will sufficiently indicate the changes taking place in some of our mining districts. With lead as with copper mining, the returns of production during the past twenty years show a great falling off. In 1868 the mines selling lead ore raised 84,855 tons, yielding of metallic lead 68,303 tons, and of silver 569,345 ozs. As regards silver obtained from lead, while the yield of metallic lead has from year to year diminished, the silver obtained therefrom has been greatly increased; this will appear in the following abstract, showing the production of lead ore, lead, and silver obtained in each of the years below:—

Year.	Lead ore.	Lead.	Silver.
	Tons	Tons	Ozs.
1858	95,855	68,303	569,345
1860	88,791	63,225	549,090
1862	95,312	69,013	686,123
1864	94,463	67,081	641,088
1866	91,051	67,391	636,688
1868	95,236	71,017	841,328
1870	98,176	73,420	784,562
1872	81,564	60,420	628,920
1874	76,151	58,754	509,558
1876	79,096	58,667	483,422
1878	77,350	58,020	397,471

An examination of these figures show that, excepting a few years, 1868 and 1870, more especially in the last named year, the ore was more productive in lead than in previous years, while during the last two years—since 1876—a greater percentage of lead has been obtained from the ore than formerly.

**IMPORTS AND EXPORTS OF LEAD.**—The total quantities imported in 1878 amounted to 15,392 tons of ore, 100,141 tons of pig and sheet lead, and 573 tons of lead manufactures. Of the ore imported Italy contributed 8287 tons, Chili 1360 tons, Portugal 1094 tons, and our remote colonies of Western Australia 1565 tons, and Victoria 789 tons. The great bulk of pig and sheet lead was from Spain 76,232 tons. Of the remainder Germany contributed 2594 tons, Greece 6165 tons, Belgium 4566 tons, Holland 4111 tons, and Portugal 2148 tons. The exports of British lead in 1878 amounted to 20,864 tons of pig and 13,521 tons of lead in the various forms of rolled, sheet, piping, and tubing. Of these exports China received 9381 tons, Russia 6357 tons, Australia 3775 tons, British India 3429 tons, Germany 1209 tons, France 1404 tons, the United States 377 tons, and other countries 8512 tons. Bearing on the productive character of lead ore it should be noticed that but very little variation is to be observed. For example, in 1869 it required of the ore produced 132 tons and a fraction to make 100 tons of metallic lead; in 1878 the quantity of ore appears to be about 132 tons; while of lead in 100 tons of ore the average in 1869 gave 75.6 tons, compared with 75 tons in 1878. The silver in a ton of lead in 1869 was 11.35 ozs., compared with 6.85 ozs. in 1878. In the first-named year the silver obtained from lead, the produce of British mines, was 831,891 ozs., compared with 397,471 ozs. in 1878.

**ZINC ORES AND METALLIC ZINC.**—The mines selling these ores, principally sulphides, in 1878 numbered 56, and produced 25,438 tons, of the value of 80,565 £, compared with 24,405 tons, of the value of 86,151 £, in the previous year. The metal obtained on the reduction of these ores being respectively 6309 tons in 1878 against 6333 in 1877. Regarding the prices of ores a considerable falling off appears; thus in 1878 the average price per ton obtained respecting a few low-priced parcels did not exceed 3 £. 7s. 8d., against 3 £. 17s. 4d. in the previous year; while as regards the prices of the several varieties of metallic zinc the market has fallen considerably. Thus English spelter in 1878 fell to 19 £. 10s. per ton, against 21 £. 15s. in 1877; foreign spelter 17 £. 18s. 4d., against 20 £.; and sheet zinc 22 £. per ton in 1878, against 24 £. 4s. in the previous year. The highest price of English spelter in 1878 was 21 £., against 22 £. 10s. in 1877; the lowest price 17 £. 5s., against 19 £. 2s. 6d.; whilst sheet zinc in 1878 was quoted at 23 £. 5s., against 23 £. per ton in 1877, the lowest prices in each of the same years being 20 £. 10s. and 23 £. 10s. respectively. In the following summary appears the production of zinc ores in 1878, with the respective values:—

No. of mines.	Counties, &c.	Quantities.	Values.
		Tons c. qr.	£ s. d.
11	Cornwall	4,482 16 2	12,389 14 6
5	Shropshire	598 11 0	1,365 0 4
1	Yorkshire	5 13 0	16 10 0
1	Derbyshire	3 10 0	6 10 0
7	Cumberland	1,566 3 0	3,814 14 10
8	Cardiganshire	505 0 2	1,507 0 2
5	Montgomeryshire	2,217 6 0	6,019 16 9
3	Denbighshire	2,984 10 0	11,268 5 7
4	Flintshire	2,666 0 0	9,234 8 6
4	Caernarvonshire	504 8 0	1,260 4 11
5	Isle of Man	9,569 4 0	32,383 6 9
1	SCOTLAND	235 0 0	940 0 0
1	IRELAND	100 0 0	360 0 0
56	Total	25,438 2 0	80,565 12 4

Glancing through the detailed list of mines producing zinc ore, Great Laxey, in the Isle of Man, sold 9411 tons; the West Chiverton Mine, Cornwall, 3284 tons; Talargoch Mine, Flintshire, 2595 tons; Minera Mine, Denbighshire, 2735 tons; and the Van Mine, Montgomeryshire, 2100 tons.

**IMPORTS AND EXPORTS OF ZINC.**—The zinc ores imported in 1878 amounted to 24,490 tons, crude metallic zinc 32,722 tons, and of zinc manufactures 16,208 tons. The great bulk of the ore was received from Greece, Spain, and France; the metallic zinc and manufactures from Belgium, Germany, and Holland, some 350 tons coming from the Australian colonies. The zinc and spelter (including crude and manufactures) exported in 1878 amounted to 6666 tons of British and 3460 tons of foreign, while of British ores some 2130 tons were exported to Belgium. It is worthy of note that of the exports our territories in British India received 5196 tons of British and 1391 tons of foreign zinc, while the several colonies of Australia received in the aggregate 466 tons of British and 664 tons of foreign zinc.

**PYRITES (Mundic, Sulphur, and Arsenical Ores).**—The production of these ores in 1878 amounted to 29,867 tons, of the value of 19,099 £, compared with 43,948 tons and 28,325 £ in the previous year. The great diminution appears in the mines of Cornwall and Wicklow, the united production of which was 16,845 tons in 1878, compared with 30,014 tons in the previous year. On the other hand, Derbyshire, which in 1877 produced 1910 tons, increased in 1878 to 3087 tons. In the subjoined abstract appears the returns of the various districts in 1878, together with the values:—

Counties, &c.	Quantities.	Values.
	Tons cwt. q.	£ s. d.
Cornwall	3,203 4	2,532 17 2
Devonshire	908 0	648 4 1
Durham, &c.	1,600 0	885 0 0
Lancashire	2,000 0	900 0 0
Staffordshire	1,750 0	800 0 0
Yorkshire	1,690 0	875 0 0
Derbyshire	3,087 0	1,543 0 0
Cumberland	531 0	265 10 0
WALES.		
Anglesea	31 1	20 19 1
Caernarvonshire	773 0	567 0 0
IRELAND.		
Wicklow	13,542 8	9,610 11 6
SCOTLAND.		
Dumfriesshire	410 0	246 0 0
Renfrewshire	342 0	205 4 0
Total	29,867 15	19,099 5 10

The ores above are principally sulphur, except those of Cornwall and Devonshire, which are chiefly arsenical pyrites; while of the produce of the Irish mines some 1844 tons are noted as cupreous pyrites, Cronebane Mine producing 917 tons, and Tigrany 927 tons.

**PYRITES IMPORTS.**—The total imports in 1871 of both varieties—iron and copper—amounted to 579,261 tons, against 679,312 tons in the previous year. The pyrites imported in 1878 are said to have produced 14,443 tons of fine copper, compared with 17,000 tons in 1877. The respective quantities of these ores imported in 1878 and 1877 were received at the undermentioned ports in the United Kingdom:—

	1878.	1877.
Imports into the Mersey	224,149	239,622
ditto Tyne	139,524	189,134
ditto London	35,482	41,062
ditto Hull	21,364	25,883
ditto Ardrossan	10,692	14,498
ditto Glasgow	20,696	24,731
ditto other ports	127,354	144,382
Total	579,261	679,312

The value of the imports in 1878 is 1,336,047 £, compared with 1,643,614 £ in the previous year. The detailed returns for 1878 appear as follows in the imported quantities, when the following countries sent pyrites into the United Kingdom:—Norway 5773 tons, Portugal 136,705 tons, Spain 419,561 tons, and other countries 12,313 tons, giving an aggregate, as previously stated, of 579,261 tons.

**MISCELLANEOUS MINERALS.**—The auriferous rocks of Merionethshire at Clogau yielded 698 ozs. of gold, of the value of 285 £, while the gold obtained from Wicklow amounted to 6 ozs., of the value of 23 £. 8s. 8d.—Silver Ore Four mines are noted as yielding silver ore

in Cornwall—Wheal Brothers, Wheal Newton, the Prince of Wales, and Redmoor Mines; of these Wheal Newton produced 844 tons, yielding 26,800 ozs. of silver, of the value of 5806 £; Redmoor, 77 tons of argentiferous copper precipitate, yielding 114 ozs. of silver to the ton, the value being 173 £. 14s.

**NICKEL AND COBALT.**—A cobaltiferous iron ore has been wrought for some years in Flintshire at the Foel Hir Hirradug Mine, and produced in 1878 some 99 tons, of the value of 616 £. 17s.

**CHRE AND UMBER.**—These are chiefly oxides of iron of a red, brown, or yellow colour; the principal localities in which they are obtained are as follows:—

County.	Mines.	Quantities.	Values.
		Tons	£ s. d.
Cornwall	South Terras	70 0	35 0 0
Devonshire	Ashburton	1416 0	975 0 0
Derbyshire	Speedwell	6 12	3 6 0
	Goodhall & Pipes	19 2	10 0 0
	Sundries	10 0	6 0 0
Durham	Waterhouse Co.	98 8	80 0 0
Anglesea	Pary's Mountain	834 5	945 5 8
	Mona	1468 2	1250 0 0
Isle of Man	Patrick Malen, &c.	232 3	534 0 0
Glamorgan	Garth Mine	260 5	200 0 3
Total		4414 17	£4038 11 11

**MANGANESE.**—Some ten mines raised and sold 1586 tons, of the value of 3121 £. The ores of this metal are of various oxides, the black oxide being largely used in the bleaching processes; it is also used for the production of oxygen gas. The mines of Devonshire produced some 1310 tons, Cornwall 35 tons, Derbyshire 192 tons, and Glandore Mine, in the County of Cork, Ireland, 50 tons.

**ARSENIC** is alone obtained from Cornwall and Devonshire; in the former fourteen mines and the latter four mines are in operation. The quantities obtained in 1878 were as follows:—

	Quantities.	Values.
	Tons	£ s. d.
Cornwall	1843 5	7,393 15 5
Devonshire	3148 5	19,501 18 2
Total	4991 10	£26,904 13 7

The foregoing are the more important of the metalliferous minerals raised in the year 1878, and before referring to the earthy minerals the following *resumé* of the quantities and value of the ore and regulus imported into the United Kingdom in 1878 will appear as follows:—

Minerals.	Quantities.	Value.
	Tons	£ s. d.
Tin ore	567	15,916
Copper ore	103,169	892,850
Lead ore	15,392	191,761
Zinc ore	24,490	101,898
Pyrites	579,261	1,336,047
Copper regulus	33,488	1,151,920
Iron ore	1,173,141	1,162,851
Gold ore	11	9,945
Silver ore	—	529,785
Manganese	9,829	40,225
Ores unenumerated	5,983	131,026

**CLAYS.**—Porcelain clay (or kaolin) and china-stone—earths of great fusibility, supposed by some mineralogists to be the result of the decomposition of felspar, one of the constituents of granite, are obtained in many districts in Cornwall and Devonshire. The production in 1878 and the previous years was:—

	1878.	1877.	1876.
	Tons.	Tons.	Tons.
Cornwall	185,203	200,345	165,125
Devonshire	27,093	23,295	25,500

**FIRE-CLAY AND POTTER'S CLAY** is also obtained in Saint Agnes, in the North of Cornwall, where it occurs, 1169 tons were raised in 1878; and in Devonshire, in the neighbourhood of Newton and on Dartmoor, 66,886 tons were raised and shipped at Teignmouth, of which quantity 7515 tons went to foreign ports and 58,921 tons to British ports. In Dorsetshire, potter's clay is wrought extensively near Poole, the total quantity raised in 1878 amounted to 123,158 tons, of which 6000 tons were exported, and 67,130 tons sent coastwise, the remainder being used in local works or distributed by railway. The total production of porcelain clay, china-stone, and potter's clays in 1878 was 444,759 tons.

**FIRE CLAYS**, obtained from the coal measures, produced in the past year 2,266,727 tons, compared with 2,568,351 tons in the previous year. The average value of these clays may be taken at about 5s. per ton.

**SALT.**—The total production of the United Kingdom amounted to 2,682,930 tons in 1878; of this quantity 182,930 tons were rock salt, and 2,500,000 tons white salt. Cheshire, Staffordshire and Worcestershire, and the North of Ireland (near Belfast and Carrickfergus), are the principal seats of the industry. The total exports of salt (rock and white) in 1878, and the previous year, appear as follows, with the countries receiving the same:—

Countries to which exported.	Quantity—tons.	Value—£.	Quantity—tons.	Value—£.
	1878.		1877.	
Russia	54,306	30,061	65,281	35,212
United States	230,553	148,093	233,200	144,041
British North America	75,797	37,293	67,683	25,774
British India	231,831	148,764	227,443	115,392
Other countries	226,389	139,085	240,250	142,994
Total	818,876	503,296	833,862	463,413

**BARYTES.**—This earthy mineral, known also as "heavy spar," is extensively raised, though confined to a few districts. In 1878 the production amounted to 22,435 tons, of the value of 36,686 £, obtained from the following counties:—

Counties.	Quantities.	Value.
	Tons	£ s. d.
Devonshire	312 14	1,248 10 0

the best Low Moor forged iron. A bell or cylinder, through which the rope passes, is placed beneath the pulleys, and in case the cage is overwound before it can reach the pulleys, the hook passes into the cylinder, which catches a pair of feathers, and the rope is detached and passes over the pulley, while the hook securely locks itself on to the ring of the cylinder and, with the cage attached, is left hanging. It is so complete that the rope can be replaced and work resumed in five minutes. This invention promises to be quite as great a success as Mr. Wilson's rock and coal-boring machines, which are now being adopted in all parts of the world, and are giving the greatest satisfaction. Mr. Wilson has now in hand a smoke consuming apparatus, which will no doubt prove a great boon, not only for consuming smoke, but for economy in fuel.

—Auckland Times, Aug. 15.

### Meetings of Public Companies.

#### EAST CRAVEN MOOR LEAD MINING COMPANY.

The ordinary general meeting of shareholders was held at the company's mines on August 20.

Mr. R. H. SILVERSIDES in the chair.

Mr. GRANVILLE SHARP (the secretary) read the notice convening the meeting, also the minutes of the previous meeting, which were confirmed and signed by the Chairman. The balance-sheet and profit and loss account presented was for 26 months, from the commencement of the company's operations to the end of June last, showing an expenditure of 52,957. 3s., made up by the following items:—Labour, merchants' supplies, and plant, 37,911. 6s. 4d.; a new Robey's engine of 22-horse power, made expressly for drawing from two shafts at the same time, also for pumping whenever required, 5,400. 12s. 8d.; miscellaneous expenses, including law charges in connection with the formation of the company, 2,421. 9s. 9d.; directors' fees, 315s.; managing director's and secretary's salary, including rent of office, 380. 12s. 3d.; rent of adit level, 20s.; and auditors' fees, 65. 6s. On the contra side credits taken for 50 tons of lead ore at the low price of 5s. per ton, 400s.; interest, 58s. 1s. 7d.; and for plant, 100s.—the balance of the new engine, which has only been got to work within the last few days—showing a balance of 38,371. 1s. 5d. The managing director, in reply to enquiries, said that there remained of the working capital, which was, as no doubt all were aware of, 12,000s., 71,721. made up thus, as shown in the balance-sheet: Capital uncalled, 51,957.; shares unallotted (97), 970s.; calls to collect, 7071. = 71,721. The least house contained fully 50 tons of clean ore, and, as they had that morning seen for themselves, was ready for the smelt mill, in addition to many tons of blocks of solid lead in and on the dressing floors and at the surface near the new shaft.

The Chairman regretted that more shareholders were not present to see for themselves what they had seen that day. It was very gratifying to him to see such progress made in so short a period, and with such satisfactory results, and he thought all who had taken the trouble to be present would go away thoroughly satisfied. He would not go into details, as their managing director had prepared a very elaborate statement of the operations, &c., since the commencement by the present company. He moved that the balance-sheet and profit and loss account for 26 months ending June, 1879, be received and passed, which being seconded, was carried unanimously. At the Chairman's request the managing director then read his report as follows:—

“The following is a full account of the operations carried on underground in the mines, the discoveries which have been made, the work that has been accomplished at surface, also of the erections made and completed since this company was first started. Commencing with the underground operations. The old shaft, which is 56 fms., or 112 yards deep, has been re-timbered. The 56, or joint adit level, upon Hardgate vein, has been reopened and timbered for 83 fms. east of the shaft. A cross cut south, in the extreme end of the sett for 100 fms., has been cleared and repaired. These operations have incurred considerable outlay, and took several months to accomplish without giving any returns, but they were absolutely requisite, this being the adit or water level, and it was little use operating elsewhere in this part of the mine, which is very extensive, until the adit level was thoroughly cleared and repaired, in order that the water could get freely away. At the extreme eastern part of the mine, in which several veins were intersected, and from which a small quantity of ore was taken away in the level above by former workers, a cross cut has been put in this bottom or 56 fathom level by the present company, to intersect Rothwell vein, for about 4 fms. long, but discontinued in consequence of the limestone dipping rapidly under the black shale, in which formation no ore is likely to be found; also a drive south upon a branch of the vein from the cross cut, 15 fms. long; at one place it produced as much as 10 cwt. of ore per fathom, but becoming poorer was also discontinued. A ladder-rope from the 42 to the 56, east of shaft, has been put down, and the 56 has been driven west upon Hardgate vein 102 fms., the vein in the end being 5 ft. wide, is a strong powerful lode, producing saving work for dressing. From this level two cross cuts south have been put out to Woodhouse vein, the first 6 fms. long, at a point 63 fms. west of the shaft, and the second 5 fms. long, at a point 80 fms. west of shaft. A rise is being put up in back of this level, 15 fms. behind the end or forebrest of the level, in a vein 3 ft. wide, producing saving work for dressing. A winze has been sunk from the 42 to the 56 at a point 57 fms. west of the old shaft, ladder-way put in, also water blast and air pipes to ventilate the 56 fm. level.

The 42 has been cleared and repaired for 40 fathoms east of the old shaft, also for 210 fathoms west of shaft it has been reopened and timbered, and the level extended a further 40 fathoms, and communicated with the new shaft, which level I will refer to presently. Four cross cuts have been put out from this 42 fathom level, three of which were driven to intersect Woodhouse vein at as many different points. No. 1 is 3 fathoms long, 59 fathoms west of old shaft. No. 2 is 3½ fathoms long, 78 fathoms west of old shaft. No. 3 is 4 fathoms long, 83 fathoms west of old shaft. A winze is being sunk, level, carrying a good mixture for ore. No. 4 cross cut is at a point 3 fathoms east of the new shaft; this is driven 48 fathoms, and the end is within 4 to 5 fms. of intersecting the first of a series of eight or nine parallel veins, all of which have been worked on from the surface and produced ore, most of them in considerable quantities, as is evident by the magnitude of the old men's workings still to be seen at surface. I now come to the new shaft; this has been sunk from surface 54 fms., has been cased and divided and ladder-way fixed, and plate made at the 30, 42, and 54 fm. levels. The 54 is extended east of shaft upon the vein 23 fms. 1 ft.; the vein for 11 fms. in length both in the roof and sole of level, is worth 3 tons of ore per fathom, which is being stopped (taken away). This 54 fathom level is also extended west 12 fathoms from shaft on the vein, which is 4 ft. wide, 10 fathoms of which will produce 24 cwt. of ore per fathom. The 30 fathom level driven by former workers was discovered in sinking the shaft; it has been cleared and repaired for 94 fathoms west of shaft. It will be seen that this part of the mine is opening up very satisfactorily indeed. The new shaft being sunk near to the northern boundary, the cross-cut driving south (already 48 fathoms in) will intersect all the veins running east and west, of which there are not less than 20, being cross veins. I have alluded to the bottom levels being driven west from the old shaft towards the new shaft; when these are communicated the western workings also will be drained by the adit level, and the cross-cut south to intersect the many veins in this valuable property will be carried out without hindrance from water—a very important matter in mining.

[Here follows a recapitulation of the underground works carried out by this company since the commencement to the present time, which shows that there has been re-opened, repaired, or retimbered 5-3 fms.; levels and cross-cuts, 255 4 fms.; shaft sunk, cased, divided, and completed 54 fms.; winzes and rises, 31 fms.; making a total of 9 3/4 fms.; besides ladder ways and some hundreds of fathoms of tramways laid down in the levels.]

Surface Workings and Erections: A new horse-whim, with tackle complete, at each shaft. At New shaft a Robey's patent winding engine 22-horse power, with a pair of drums for drawing, and with pumping connections complete. A very substantially built bed for engine, an engine house 38 ft. by 20 ft., covered with galvanised corrugated iron, the floor laid with flags; also head gear and pulley stands complete. The whole of the above are new, the engine being made expressly, and suited for drawing from two shafts at the same time, also for pumping when requisite. A reservoir for storing water for supplying the engine has been made. A tramway 500 yards long to convey the leadstuffs to the dressing floors from the new shaft has been laid down, and is now being used. New dressing floors have been made and laid out with slides, jiggers, buddles, tyes, and trunks, and the floor laid with strong flags. The whole is covered by a substantial building. A good supply of water being indispensable in the preparation of lead ore for the smelting house, it will be gratifying to know that we have three reservoirs for storing water with leads connecting them with the dressing floors. It will be seen by the foregoing that a very large amount of work has been done, and well done too, and that the money laid out thus far has been well and judiciously expended. I may here remark that without particularising the item of 1000s. in the balance-sheet for plant, it includes the new engine just erected.

We are now in a position to increase considerably the returns of ore; at the present time we have about 50 tons at surface, dressed and in course of dressing, and now that the new engine, which was only put to work last week, is started for good we shall hope very shortly (say within two months) have at least 1000s. worth of lead ready for market. Whether or not it would be advisable to smelt the ore and sell what we already have in the bin at the present time while the price of lead is so low requires but little consideration when I find some very important facts disclosed in connection with the lead trade in the Board of Trade Returns for last month; it shows a falling off in imports from abroad of some 2726 tons, whilst on the other hand our exports to foreign countries show an increase of 650 tons. Russia, who until 1877 was one of our best customers for lead (paid us 200,000s. per annum for the four years preceding that year), has during the past two years bought comparatively little of us, but in January this year she took of us 83 tons, as against nothing for January, 1877 and 1878; in May she had increased her demands to over 2100 tons, and for June 1879 tons in excess of what they were in 1878, and last month was an increase of 1103 tons compared with the corresponding month of 1878. These are very important matters for congratulation, and as we already have signs of improvement not only in lead, which has advanced about 25s. per ton, but in all other metals. (Tin has risen 5s. this week.) I think it will be policy not to dispose of our lead for the present, and in this I am strengthened if what is said about the revival of trade in America be correct (there is a very important article in the Standard paper of last Monday on the improved state of trade in the United States), and the falling off of the produce of lead from the Utah Mines is to be relied upon; it is said that “the exports from these mines for the last half-year have fallen off to the extent of 2900 tons,” and that the stock of lead in New York are estimated to be reduced to 6000 tons. That the lead market in America has been advancing for some time past and is still advancing there is no doubt, and it is more than possible now that we shall get back China and Japan as customers for our lead. In concluding my report I will just say that if our mine continues to open up as well as it is doing in the vicinity of the new shaft, together with the indications to be seen in

different parts underground, which I inspected so recently as yesterday, I doubt not East Craven Moor will, to say the least, prove a very valuable property ere long.—GRANVILLE SHARP.

Mr. GRANVILLE SHARP: If any shareholder wishes to put any questions I shall be most happy to answer them to the best of my ability.

The shareholders expressed themselves so thoroughly satisfied with the elaborate and exhaustive report of the managing director that no questions being put, the Chairman called upon the resident agent, Capt. David Williams, for his report, which was read by the secretary, whilst the agent explained by a plan of the mines the various points of operation alluded to in the report.

Capt. WILLIAMS said, in reply to a shareholder, it would not be advisable to raise more than 20 tons of lead per month until the new shaft was down to the next level. He could raise 30 tons per month if it was the wish of the directors; but in doing so now, until the shaft was sunk, he considered it would be undesirable.—A SHAREHOLDER: But you say you hope to have 100 tons for sale in two months from now, of which you have 50 tons ready.—Capt. WILLIAMS: I mean after I have completed the 100 tons to raise only 20 tons per month.

Resolved unanimously, that at the managing director's and the agents' reports be received and adopted, and that a copy of the same, together with the report of the meeting, be printed and circulated amongst the shareholders.

Mr. R. H. SILVERSIDES, the retiring director, was re-elected, as was also the auditor.

The Chairman thanked them heartily for the confidence they placed in him by having re-elected him as one of their directors. He was quite willing to retire in favour of some younger man.

Mr. GRANVILLE SHARP said he for one would have been exceedingly sorry to have lost Mr. Silver-sided from the board. He felt that his long experience and services were valuable to the company.

The Chairman, in the name of his colleagues and himself, also thanked them, and could assure them that their only object was to do the best they could for the company. That they had done, and should continue to do. (Applause.)

A vote of thanks being unanimously recorded to the Chairman, the meeting, which was delayed some two hours in consequence of shareholders devoting so much time in inspecting the surface operations and erections, whilst others were more desirous of making an inspection of the operations underground, with just a visit to the dressing department, all of whom expressed their entire satisfaction, broke up, and the shareholders returned to Pateley Bridge.

#### SOUTH CROFTY MINING COMPANY.

A meeting of adventurers was held at the mine on Friday.—Mr. H. J. LEAN, the pursuer, presiding. The accounts, which we have already published, showing a debit balance of 4456s., were examined and passed. The agents' report was as follows:—

Since the last meeting of the adventurers we have driven the 205 cross cut north 31 fathoms. About 17 fms. north of the large lode, on which we opened 20 fathoms in length, as previously reported, we passed through a lode 10 ft. wide, on which we drove 2 fathoms east; it contained a little tin throughout, but was not of any value for working. Being a large and promising-looking lode it is well worthy of being further explored, but after opening on it a little we thought we had better open the cross cut further north. Last week we intersected another lode 16 fathoms north of the one above reported on; we have driven through it 9 ft., but are not quite satisfied that we have passed through the whole of the lode. We have now driven east of cross cut on this lode 4 ft.; the end produces splendid stones of tin, and has altogether a very promising appearance. The stuff from this lode has a stronger resemblance to the rich lode in East Pool than anything we have yet seen in the mine. We propose at present to continue driving eastward to explore this lode towards East Pool; we have not opened sufficiently on the lode to put any value thereon. The three lodes that we have intersected in the 205 cross cut are all large and promising, and will produce through the entire length of the sett. The all right to be explored both east and west of the cross cut, but if only one end is to be driven we think it would be advisable at present to open on the last lode we intersected.

The PURSER explained that since the last meeting there had been further relinquishments to the extent of 63 shares, and this would bring the total number of shares down to 633; but the existing debit balance would be divisible among 748 shares.

Capt. A. JAMES asked what promise there was of getting the ground on the north side, provided that the explorations in that direction turned out favourable?

Capt. THOMAS replied that they had not yet taken any steps for obtaining a lease of the ground, but the matter had been talked over, and he did not anticipate that there would be any difficulty in getting it. They did not require any lease yet, as they were at least 20 fms. short of the boundary. He should very much like to put the cross cut right through, for they were down to a great depth, the ground was quite unexplored, and nobody knew what was there. One thing was certain, that they would cut the North Crofty lode there somewhere if they continued to cross cut far enough.—Capt. JAMES said he thought it would be well to get a promise of the ground as quickly as possible, and Mr. H. P. VIVIAN expressed a similar opinion. He suggested that the pursuer and Capt. Thomas should be instructed to take what steps were necessary in the matter.—Mr. JAMES also strongly advocated something being done to ensure the possession of that ground. If they went down close to their boundary, and intersected the lode there, and it was dipping north, there were many parties who would be certain to try to get that sett, and he, therefore, thought it should be secured before they put their cross cut down.

Capt. JAMES: Supposing that in the next fortnight we should cut a lode worth 20s. a fathom? That would not be a very rich lode, and it is not improbable that we may do so. Directly we cut that lode some one would at once begin to look after the adventurers' share of the share. This lode underlying north would, perhaps, in the course of about 50 fathoms go altogether out of our sett, and therefore I quite agree that it would be wise to make that ground sure before we go any further. At any rate, we should have a promise of the ground. It should be made a point that if the cross cut is to be continued north we should have the ground in that direction.

Capt. JAMES THOMAS said he quite agreed with this view of the subject, and he could assure the adventurers that it had not been lost sight of. He had spoken to the Telford office representatives about it, but as yet no formal application for the ground had been made. If the matter was left in the hands of the pursuer and agents they would enquire further about it. They would not be incurring any additional expense in the matter, and they might as well have the ground as not.

Capt. THOMAS next stated that they had been making very good progress in driving. At the last account he told them they expected to drive the 205 fathom level at the rate of 6 fms. a month by the boring machine, but they had really driven nearly 8 fathoms a month. And their loss, which they expected would have been something like 200s. a month, had only been about 130s., this arising from the fact that they had had a few tributers at work, which had resulted in a small profit being made.

The PURSER, in answer to a question from Mr. Tregenza, stated that the amount of calls now remaining unpaid was about 1092s., most of this being due upon the last two instalments.—A resolution was passed instructing the pursuer to obtain the immediate payment of all calls in arrears, and to take legal proceedings against all parties who were more than one instalment of the last call in arrears.

The question as to the call now to be made led to some discussion, various sums being mentioned, from 6s. per share down to 2s. The PURSER said he was afraid that if they made too large a call it would have the effect of frightening a good many of the adventurers out of their shares. It was, of course, very desirable that they should have as much money as possible, but seeing that already the shareholders had been called upon to provide a large amount it had occurred to him whether it would be wise at this stage to make such a call as might lead to the relinquishment of a great many more shares.

Capt. JAMES, however, advocated the making of a call sufficient to wipe off the whole of their liabilities. He pointed out that if the mine was to stop the adventurers would be called upon to make up the entire deficit, and that being so he saw no reason why they should not do so now. He did not see why a large banker's balance, bearing a very interest, and unpaid merchants' bill, should be allowed to continue hanging over their heads, and he should certainly make a call that would free the mine entirely from debt. If that was done they would very soon see that the shares would obtain a market value, and this would enable any adventurers to dispose of their interest who desired to do so; but while the mine was involved in heavy debt it was impossible for those shares to obtain the slightest market value.

Capt. THOMAS said he thought a 2s. call would be sufficient, and after some further discussion it was resolved that a call of 2s. per share should be made.

Attention was next called to the fact that the agreement whereby the East Pool adventurers were to pay 3s. per month towards the South Crofty pumping charges for six months, would expire on Sept. 17, and it was decided that an application should be made to the East Pool committee to continue the same.

Another meeting will be held on Sept. 19, to receive the report as to the result of this application, and to forfeit shares on which the arrears of call remain unpaid.—Cornish Telegraph.

#### BIRDSEYE CREEK GOLD MINING COMPANY.

The annual general meeting of shareholders was held at the offices of the company, Austinfrs, on Thursday, Mr. J. T. P. PECHY, the Chairman, presiding.

The notice calling the meeting was read by Mr. W. J. Lavington, the secretary.

The CHAIRMAN, in moving that the report and accounts be received and adopted, said he thought he might fairly congratulate the shareholders on the evidence which the report afforded of the return of a more prosperous condition of affairs. The shareholders would remember that in the report of last year the directors stated—“The directors believe that the turning point in the operations of the company has now been reached, and that with an average water supply the accounts will, in the future, show results far more satisfactory than those which have characterised them for some years.” He thought that the belief had been confirmed by the report and accounts presented to-day. Last year there was a fair average water season, and the company was able to buy water till the end of September, and it was not until the end of October that the superintendent was able to telegraph the final clean up. If the water season had commenced, as usual, in the middle of December they would have had only six weeks of enforced idleness; but the water season of 1879 was very late, and washing did not commence till Feb. 19 in the present year, and consequently the returns would have been very much more if they had had two months more washing. The present water season bade fair to be a long one. He was sending yesterday in a San Francisco paper that the South Yuba lakes were full, and would be well able to supply their customers, and he hoped this company would be able to carry on washing as late as last year. The receipts amounted to 13,555s., against 8700s. in the previous year. Of course, owing to the water season extending over a longer period, the costs increased in the same proportion as the returns. There were one or two items in the costs to which he must call attention. The wages amounted to 4687s., against

4132s.; but that required no comment, as it was caused by the longer water season. There was an item of powder 3104s., against 1855s. in the previous year; but he should mention that that included an amount of 600s. bought in the month of April, but which was not used till the middle of this year—so really that 500s. should come into this year's account; but, as it had been paid for, the directors thought it right not to interfere with the accounts made up by the superintendent. The item for water was 1397s., against 593s., the difference being accounted for by the increased water supply. There was an item of interest 418s., which would not occur again. Thus, there was altogether nearly 1000s. which under ordinary circumstances would not have come to cost, and would have made the profits more. In the present accounts the office expenses had been again reduced—from 2971. to 2521. In the balance-sheet of last year the debentures stood at 3800s. to the debit, and they had now been reduced to 2850s. The amount due to Mr. Powers, the superintendent, last year was 504s., and now 245s. The sundry amounts owing in London last year were 906s., and they had now been reduced to 721s. Since the accounts were made up the directors had been advised of a profit of 31,71s., which had wiped off all the loan in California, 1541s., also the amount due to Mr. Powers, 246s., and the sundry amounts owing in London, 721s., so that there was now only about 250s. owing. So it could be seen that they had materially reduced their liabilities, and they might look shortly to the 2000s. of debentures representing all the company's liabilities. The report of the superintendent, annexed to the report, dealt with the various points in the mine. With regard to the Neece and West Mine, he thought it right to Mr. Bowe and the superintendent (who strongly urged the purchase of that piece of ground) to remark that all the profits had been made out of that piece of ground, and one month's run alone had paid for the purchase of that piece of ground. (Cheers.) With regard to the Waloupa Mine, Mr. Powers had been somewhat disappointed with the results, but he hoped next year to make larger returns there. The shareholders must remember that one claim alone had, as he had said, made the profits shown in the accounts, and therefore, the directors looked forward with confidence to making larger profits than heretofore when they got the three claims into working order. He did not think it necessary to say much about the debris suit—it was a matter over which the directors had no possible control. The farmers in California had commenced a suit against this and other companies, which were acting together to win the day, and he did not see why they should not win. The miners went to California in 1843 and 1849, long before the farmers commenced operations there, and therefore, it was impossible to suppose the Supreme Court would say that the mines were to be shut up because the debris from the mines ran down the river to the farms below. In the report the directors stated they did not think that the position of the company would be in any way prejudiced by the adoption of the new constitution in the State of California. In conclusion, the Chairman moved the adoption of the report and accounts.

Mr. HUNT seconded the resolution, and said he supposed the directors anticipated that those claims which were not now remunerative would come into working order presently.

Mr. J. E. BOWE (a director) said the Waloupa Mine was in a good position, and he had no doubt would be remunerative early next season, if remunerative at all, and he believed it would be remunerative, inasmuch as the surface workings had paid for 1200 ft. in length, and it was unreasonable to suppose that the strata underneath would not also pay. As to the Red Dog claim, there were 400 ft. to run through hungry ground before they reached the channel, which was 2500 ft. long, and which had been worked out to some extent by drifts, and proved to be rich, and no doubt when they reached that drift it would be remunerative for a great many years.

A SHAREHOLDER asked whether the shareholders were called upon individually to pay taxes, as well as the corporation? He agreed with the directors in believing that the new constitution would not in any way prejudice the company. He asked whether the lawsuit commenced by the farmers was against this company or other similar companies?—The CHAIRMAN said the suit was against all the companies whose debris entered the Bear River.

Mr. BOWE said he might mention that all the hydraulic mines, both those which were affected by the suit and those which were not, had formed themselves into a mining association for the protection of their rights. He fully agreed in the opinion that the company would not be in any way prejudiced by the new constitution.

The CHAIRMAN said that as regarded the taxes being paid by individual shareholders, the taxes were so small, only about 100s., that it was a subject of no importance. The action of the new constitution would not be retrospective, and therefore the property would not be affected.

Mr. BOWE: Any of the rights accruing to us under the old constitution laws will remain with us.

The CHAIRMAN mentioned that Mr. Courtenay, the chairman of the Blue Tent, was now in California, and as he was a barrister his legal knowledge would be very serviceable, and when he returned the shareholders would have the benefit of his opinion. The resolution was then put and carried.

Mr. BOWE said he had great pleasure in proposing the re-election of Mr. Pechy as a director. He said that Mr. Pechy had acted as chairman since the organisation, and it was a great advantage to have the services of a gentleman who was practically acquainted with hydraulic mining. Mr. Pechy had been most patient in the performance of his duties, and had done what was best in the interests of the company, and it was a great advantage to have on the board a gentleman of Mr. Pechy's financial experience. (Hear, hear.)

Mr. PERKINS seconded the resolution, and said the company was fortunate in having such an excellent chairman.

The resolution was put and carried, and the CHAIRMAN briefly acknowledged the compliment.

The auditors, Messrs. C. O. Rogers and C. Hopkinson, were re-elected, and a vote of thanks having been passed to the chairman and the directors the meeting broke up.

#### AUSTRALIAN MINES.

PORT PHILLIP AND COLONIAL (Gold).—Advices received, dated July 7: Quantity of quartz crushed on both the companies' and tributers' accounts for the month ending June 30, 3828 tons; total gold obtained, 1335 ozs. 13 dwts. 12 grs.; receipts (including 1879s. 7s. obtained from tributers), 2919s. 12s. 6d.; payments (including 309s. 4s. paid for firewood), 1973s. 3s. 7d.; profit, 946s. 8s. 10d., which added to previous balance of 1506s. 1s. 8d., made an available balance of 2452s. 10s. 6d. The amount divided between the two companies was 1000s.; the Port Phillip Company's proportion of which is 650s. The balance of 1452s. 10s. 6d. was carried forward to next month's account. Remittance, 800s.

Telegram, dated Melbourne, Aug. 25: Month ending Aug. 13—Remittance, 600s.

YORK PENINSULA.—The directors have advices from the Kurilla Mine up to July 15. The following are extracts from Capt. Anthony's reports:—July 7—Kurilla Lode: At the 55, east of Hall's shaft, I have met with the cross-course bounding the western end of the main run of ore, and have come upon the ore; the yield is equal to 3 tons of 20 per cent. ore per fathom, corresponding to that at the same relative spot in the 45. As we went east in the 45 the lode widened as no doubt it will do here also. I have about 6 fathoms to drive to intersect the 45, where the lode has averaged 4 tons of 20 per cent. ore per fathom; the winze is now 6½ fms. deep. I may mention here that this run of rich ore was first seen in the clay, within 6 ft. of the surface at B trial shaft. At the 15 fathom level it was irregular for a considerable distance. At the 25 fm. level the yield was more uniform for about 10 fathoms in length. At the 35 fm. level a yield of from 3 to 4 tons of 20 per cent. ore per fathom for a distance of 18 fms., the western extremity dipping west at an angle of 45°, and the eastern end dipping down vertically. At the 45 it was 30 fms. long, having lengthened 2 fms. eastward, and maintained the angle of dip westward; here the western end was 10 fms. west of the Hunting shaft. At the 55 we have reached the ore at 20 fms. from the surface, but I have not yet reached the level of the ore. The ore will be in the ore at (say) the 100 fm. level. These facts speak for themselves as to the necessity of deepening Hall's shaft. Two men continue to work on tribute to the 45 east, at 10s. in 17, two others in the 15 east, and two in the green ore at the 9, east of B trial shaft, and from which place they raised last month a capital pile of ore, far exceeding regular wages. Total on tribute six men, at 10s. in 17.

Morphe's Lode: At the 43 east the lode is worth 3 tons of 16 per cent. ore per fathom. At the 43 west the lode is worth 5 tons of 16 per cent. ore per fathom. During the past month the lode here was pinched by hard ground, and I feared that we had reached the western end of the shoot; it, however, opened again, and soon resumed its former value. The slope in the 41 east is yielding 3 tons of 18 per cent. ore per fathom, or better than I anticipated. The winze sinking below the 30 west is worth 4 tons of 16 per cent. ore per fathom.—Branch on the north of Morphe's Lode: I arranged with two men to drive on tribute north from Morphe's Lode on the cross-course east of the shaft. On the 4th instant they cut the western part of the branch which was seen in the 20 and 10 fathom levels; it is 2 ft. wide, and is worth 3 tons of 16 per cent. ore per fathom. I expect to find the eastern part about 12 ft. further north. At the 20 two men were working in the bottom of the drive on the east side of the cross-course, and the 10 fms. level, an inclining floor seemed to displace or wholly destroy the branch going eastward, but during the past month they have cut through the floor, and find that the branch continues, with every appearance of being a distinct lode. At the 10, too, the tributers have met with similar proofs of its continuance going east. I have put the tributers at the 20 to sink a winze to the 30 to lay open the lode for stoping. Except a few fathoms excavated by the tributers, this lode is whole from the 30 to the surface, and four months would lay it open for tribute works to the 43. At the present price of copper it is not an easy matter to set a value on any new lode, but were it higher, we might reasonably regard this part of the mine as having greatly increased in value during the past few weeks. This lode is only about 6 fms. north from Morphe's Lode.

On July 8 the main bunch of ore in the 55, east of Hall's shaft, is reported as 3 ft. wide, hard and solid. On July 16 he reports that he had reached the eastern portion of the branch, north of Morphe's Lode at the 30, and that it was 2 ft. wide, of rich ore, and worth at the present price of copper 45s. per fathom. He adds—“This is the most important report that I have ever submitted to you.”—Ore Returns: On hand at June 1, 241 tons of 14 per cent.; raised during June, 150 tons of 18 per cent.; dispatched for sale 100 tons of 17 per cent.; on hand July 1, 292 tons of 14 per cent., 500 tons of smalls of 5 per cent., and 1330 tons of dredge ore of 5 per cent.

SCOTTISH AUSTRALIAN.—The directors have advices from Sydney dated July 7. The sales of coal from the Lambton Colliery for the month of June amounted to 20,954 tons, making up a total for the half-year ending at that date of 1,0621 tons.

ENGLISH-AUSTRALIAN GOLD.—Capt. Raisbeck, Fryerstown, July 8: Mr. Clark informed me we had money to recommence work; we have been getting ready necessary material for the work, and are making four new trucks, as there is loss of time in removing them from one level to another. Yesterday we commenced to drive the south 420 ft. level with six men; as there is about 250 ft. to the boundary, there is space for large quantities of stone; there is at present a strong stony lode in the end, but very little quartz. I hope it will alter for the better soon. The tributers cleaned up on the 23rd ult. 296 tons—result, 31 ozs. melted gold. They have 70 tons in the mill; the stone crushed is about the same quality as last month. They have been doing dead work for the past week or they would have more stone broken. They are working 80 ft. above the top level and 40 ft. west of the lode. They have extended their workings upon this line nearly up to the south boundary and 70 ft. north of it. This is a strong body of stone, and the lode is making a very good showing. The appearance of the stone is about the same as last month. As we are obliged to keep two engine-drivers, the tributers will have to take in more men in a few days, as soon as they get their staves in working order; at present they are the same men as last month. We have sold about 10 tons of pyrites at 60s. per ton. The buyer sampled it; he could not give more for it I see by our crushings. The lot sold previously at 50s. per ton produced 3 dwts. 15 grs. per ton when crushed; at 60s. per ton produced 1 dw. 30½ grs. per ton; expect we will get full value for it.

# Metallic Sulphides Reduction Co. (HOLLWAY'S PATENTS.) (LIMITED.)

Incorporated under the Companies Acts, 1862, 1867, and 1877.

CAPITAL £100,000, IN 10,000 SHARES OF £10 EACH.

Deposit on application, £1 per share; payable on allotment, £1 10s. per share. Further calls not to exceed £2 per share, and not to be made at intervals of less than three months.

## DIRECTORS.

J. N. GORDON, Esq., M.I.M.E., F.R.G.S., 49, George Street, Portman Square, W. (Chairman of the Canada Gold Co., Limited.)  
WILLIAM W. HUGHES, Esq., 48, Porchester Terrace, W. (part owner of the Wallaroo and Moonta Mines, South Australia.)  
JOHN HOLLWAY, Esq., 2, Highbury Grange, N. (who will join the Board on the completion of the purchase.)  
M. H. MOSES, Esq., 134, Westbourne Terrace, W. (Director of the Berlanga Silver-Lead Mining Company, Limited.)  
WILLIAM WALTON WILLIAMS, Esq., 29, Highbury Quadrant, N.

SOLICITORS—Messrs. GEO. and WILLIAM WEBB, 11, Austinfriars, London, E.C.

BANKERS—LONDON AND COUNTY BANKING COMPANY, Lombard Street, E.C.

SECRETARY (pro tem.)—HUGH E. MCLEOD, Esq.

TEMPORARY OFFICES—8, JEFFREYS SQUARE, LONDON, E.C.

This company is formed to acquire certain rights and privileges, hereinafter more fully specified, in Hollway's Process of Rapid Oxidation by which Sulphides are Utilised as Fuel, and in the patents granted to John Hollway under Her Majesty's Seal, No. 1131, dated 21st March, 1878, and No. 4549, dated 9th November, 1878, for the United Kingdom, and in the various patents obtained and which may be hereafter obtained in Europe, also to work the said patented process and processes connected therewith.

The practicability of this process has been demonstrated at a considerable outlay by the various experiments that have been made, the details of which were given by the inventor in his papers read before the Society of Arts on the 12th of February and 30th of April last.

The economic advantages of the process are very apparent, because it has been proved that sulphides can be rapidly smelted by the combustion of some of their constituents by simply blowing air through the melted mass. No fuel is needed after once starting the operation, except what may be required for producing the air-blast, and even for this purpose fuel would be unnecessary in the many mining districts where water power is abundant. Another important feature is that the heat generated by rapid oxidation of sulphides is sufficient, not only for their reduction, but also for that of a large addition of other ores not containing sulphur.

This process will not only reduce the cost of treatment of ores containing copper, nickel, lead, silver, gold, &c., including those of poor percentage, but will enable many mines to be worked to advantage which under the present system are unremunerative, especially in districts where fuel is expensive and the cost of transport to market heavy. It is, therefore, anticipated that the process will be quickly adopted on a very large scale.

The deposits of suitable ores in various countries in Europe—including Cornwall and other parts of the United Kingdom—are so numerous and immense that it is difficult to estimate the annual product of the royalty derivable from the use of this process. As an example, it may be mentioned that 2,000,000 tons of cupreous pyrites are annually raised in Spain and Portugal. A license has been granted to Hugh Mackay Matheson, Esq., giving him, during the currency of the patents, the option to use the process in Spain, at a royalty of 2s. per ton of ore treated, subject to provisions in case of reduction of royalties in other countries by the company. This license is exclusive so long as royalty on ore treated under it in any year after the 1st of August next shall be paid on not less than 50,000 tons. A sliding scale of royalties is provided for reducing the rates on Rio Tinto ores for each additional 50,000 tons annually treated by the process.

In addition to the large revenue that may be anticipated from royalties, the profits accruing to the company from the

treatment of pyrites, copper ores, and other metalliferous substances at their own works will doubtless be considerable, especially as the company is entitled to work the process in the United Kingdom, free of royalty, during the existence of the patents.

Several proposals have been submitted to the patentee for renting on advantageous terms works conveniently situated, possessing much of the plant and many of the appliances required. It will, therefore, probably be unnecessary to call up more than one-half of the capital.

By an agreement, dated 15th August, 1879, between the patentee, John Hollway, and Hugh E. McLeod, on behalf of the company, in consideration of a payment to him of £10,000 in cash and one-fifth of the subscribed capital in fully paid-up shares, the company acquires the right (subject to the conditions of the contracts herein named as to Spain), during the existence of the various European Patents, to grant licenses under the same, and in conjunction with the patentee otherwise to deal with the patents; all royalties to be apportioned, one-half to the company and one-half to the patentee; also the right to work the patents in the United Kingdom during their existence, free of royalty, and to vend the products of such working. The company on their part engage to provide and erect suitable works and apparatus in some convenient locality for the purpose of pursuing and completing, as far as may be practicable, the further development of the said patented process, and for establishing its economic advantages. It is further provided in the said agreement that the shares so allotted to the said John Hollway shall possess no privilege in respect of dividend over the other shares of the company on account of the said other shares being at any time only in part paid-up; but the dividends shall be of an equal amount for each share, irrespective of the amount paid, or credited as paid, thereon.

Two contracts have been entered into between the said John Hollway of the one part, and Hugh Mackay Matheson of the other part, dated the 23rd July, 1879, relating to the use of the said patents in Spain and to the royalties derived thereunder.

The subscriptions for shares, together with the amounts paid thereon, will be returned in full, unless at least one-half of the capital, exclusive of the vendor's share, be subscribed. The allotments of shares will be made *pro rata* on the applications.

No promotion money will be paid, and all preliminary expenses will be borne by the patentee in the event of the subscriptions having to be returned.

The Articles of Association, contracts, Reports of Proceedings at the Society of Arts, &c., can be seen at the temporary offices of the company, at the London and County Banking Company, Lombard Street, E.C., or at any of its branches.

London, 27th August, 1879.

# THE Llanbadarnfawr Lead Mine Company (LIMITED.)

CAPITAL £20,000, IN 5,000 SHARES OF £4 EACH,

337½ of which will be denominated A Shares, and will be liable to calls, and 1125 of which will be denominated B Shares, and be issued as fully paid-up to vendor of the property.

£1 payable on application and £1 upon allotment. In case of no allotment all moneys will be returned in full. No calls to be made within six months after allotment.

The company, being registered with Table A, will be managed by Directors to be chosen at the First Meeting of Shareholders.

BANKERS—LONDON TRADING BANK (Limited), 1, West-street, Moorgate-street, E.C.

SOLICITOR—J. E. SMITH, Esq., 9, Pancras-lane, London, E.C.

AUDITOR (AND ACTING SECRETARY, PRO TEM.)—MR. E. L. ERNEST.

OFFICES,—4, QUEEN STREET PLACE, CANNON STREET, LONDON, E.C.

## PROSPECTUS.

This company is formed for the purpose of purchasing from the present holders the Llanbadarnfawr mining sett, and by proper application of capital developing the evidently great resources of the property, which it is confidently believed by the best scientific authorities must yield great returns to the investors.

The property is situated in Cardiganshire, on the estate of Sir Pryse Pryse, some eight miles from the shipping port of Aberystwith, and in the heart of the richest cluster of lead mines in the United Kingdom. It has an area of one mile in length upon the run of the lodes, with about half-a-mile of breadth, and the turnpike road to the port forms one of the boundaries of the sett—a very great advantage in itself, the cost of carriage being much reduced thereby.

There is every reason to believe that this mine will prove one of the great prizes of this noted county. The fact of its position—viz., in the immediate neighbourhood of the best and richest mines of the past and present—would alone be sufficient to warrant its energetic working, but in addition the incoming shareholders will reap the advantage of the property having to a great extent been proved for them, and proved sufficiently to amply justify the purchase, and the application of the necessary capital to continue the work already commenced. During the development there will be good returns, and every day's work will show the mine growing richer in productiveness, and on the road to rival the best of its valuable neighbours.

An engine shaft has been sunk 30 fms. from the surface, and levels driven at 20 fms. and 30 fms. east and west. The 30 fm. level has been driven into a splendid lode, and it is only necessary to examine the ore hauled from this level and now lying at surface to be convinced that a great and profitable mine is in store here. In the adit level a valuable discovery has been made of fine ore, spotted with copper just at the point of junction of two lodes, and the lode in the level west of the south cross-cut has been proved of excellent value, even at this early stage.

The mine has the great advantage of ample water power for raising, crushing, and dressing the ore, and thus a saving of a large outlay, &c., for steam-engines, is effected; water-courses have been already made, bringing the water into the sett. Water power is one of the

rare features in mining, and one that cannot be too highly appreciated.

There are the following necessary adjuncts for working on the mine, which, with a moderate outlay, can be made sound and good—viz., a 30 ft. diameter water-wheel sunk in a 40 ft. pit, built in a thoroughly substantial manner, with bobs, travellers, and rods from wheel to shaft, pulleys, stands, &c., 60 fathom pumps, drawing machine fixed, &c.; there are also smiths' and carpenters' shops, store house, offices, &c.

From the position—some half mile south of the celebrated Goginan, and as before stated surrounded by all the richest mines of the district—and character generally of this property, it is not too much to claim for it that it is undoubtedly the best and most promising mine that has been offered to the public for many years. The proposed capital and purchase money bear but trifling comparisons to what it is evident the property is capable of becoming under good management and with sufficient working capital, and it therefore offers an excellent opportunity for investing money with confidence.

The mine as it stands with plant, &c., tack note for two years, with liberty at any time to take up lease for twenty-one years, subject to minimum rent of £25, merging into dues of one-sixteenth, the company has agreed to purchase for £3500 in money, and £4500 in paid-up shares. This moderate and reasonable price will leave ample capital for the development of the mine, and the directors will see that the money of the shareholders is applied justly and judiciously to the working of their property.

It is confidently anticipated that no further call will be required, but that on the contrary the amount proposed to be called up will be more than sufficient to develop the property, and bring the shares to a large premium.

Prospectuses, plans, Memorandum of Association, &c., can be had, and contracts seen, at the offices of the company.

The only contracts entered into are one made between James George Green, and Arthur James Chichester, of the one part, and William Henry Chichester, on behalf of the company, of the other part, dated the 23rd July, 1879; and another made between Arthur James Chichester, of the one part, and the company of the other part, dated the 1st August, 1879.

## Registration of New Companies.

The following joint-stock companies have been duly registered:—

**METALLIC SULPHIDES REDUCTION COMPANY—HOLLWAY'S PATENTS (Limited).**—Capital 100,000*l.*, in shares of 10*l.* Acquiring Hollway's patents, and carrying on the business of smelters, manufacturers, and workers of copper, gold, silver, nickel, other metals and ores, sulphur and sulphuric acid compounds, &c. The subscribers (who take one share each) are—F. Arding, 5, Jeffrey's-square; P. Pate, 7, Union-court; T. S. Whitehead, 146, Leadenhall-street; A. Edwards, 102, King Henry's-road; F. Edwards, 127, Leadenhall-street; W. Nicolson, Lee; W. J. Hollway, Woodsidings, Pinner.

**COOSHEEN COPPER COMPANY (Limited).**—Capital 30,000*l.*, in shares of 5*l.* The purchasing or otherwise acquiring of any mines or mineral properties, or leases, licenses, agreements for leases, of any mines or mineral properties situate in the parish of Schull, The exploring, working, and carrying on of mining operations, more particularly for working the Coosheen Mines, in the parish of Schull, County Cork, and any other mines in the United Kingdom. To purchase, build, or erect houses, buildings, warehouses, wharves, roads, railways, tramways, engines, wagons, or cars, and any machinery, plant, or other property deemed necessary by the company. The subscribers are—D. Horn, Liverpool, brickmaker and tile manufacturer, 5; E. B. Rigby, Halton, no business, 5; W. Pearce, Liverpool, surveyor, 5; J. Hodges, Liverpool, law stationer, 5; E. Langsdale, Liverpool, builder, 5; T. H. Pearce, Liverpool, broker, 1; J. J. Fort, Liverpool, coal tar pitch merchant, 1. Number of directors not to exceed five or be less than three. The first directors shall be W. Pearce, E. B. Rigby, E. Langsdale, and J. Hodges. The qualification for other directors to be 20 shares, to be held at least three months before nomination.

**THE "NUEVA PALENTINA" COPPER MINING COMPANY (Limited).**—Capital 25,000*l.*, in shares of 5*l.* To purchase or otherwise acquire certain lands containing beds of copper or other ores, and mines and mining rights, with all necessary appliances, situate in the village of Radondo, district of Cervera de Rio Pisuerga, in the province of Palencia, Spain. To purchase or otherwise acquire any lands, mines, mining rights, ores, or minerals, and other mining works in that district or elsewhere. To carry on the business of miners by working said mines, and for treating the ores obtained therefrom, also the business of smelters and purchasers of ores of any kind. The subscribers (who take one share each) are—A. Lyon, accountant, 77, Mortimer-road; R. H. Elisha, clerk, Dalston; T. Christie, clerk, Stoke Newington; T. H. Ashdown, clerk, 348, City-road; J. E. Layland, actuary, 30 Upper Phillimore-place; G. H. Howe, merchant, City Chambers, Fenchurch-street; B. Torrens, merchant, 16, Bishopsgate-street Without. The first board shall be elected by the subscribers. Qualification of directors other than subscribers 20 shares, 300*l.* to be divided amongst them as remuneration.

**THE NAVAL, MILITARY, AND GENERAL DRESS AND OUTFITTING ASSOCIATION (Limited).**—Capital 50,000*l.*, in shares of 5*l.* To carry on the business of naval, military, and general tailors. The subscribers (who take one share each) are—S. T. Morgan, 78, Wells-street; J. Pocock, 46, Polham-street; R. Wolfenden, 82, Fortess-road; A. Sheffield, Peckham; J. H. Gibson, Hounslow; J. Walker, Peckham; E. S. Blyns, 2, Seymour-place.

**THE LONDON BANK AND INSURANCE CLUB (Limited).**—Capital 5000*l.*, in shares of 1*l.* To purchase or otherwise acquire premises in London or elsewhere for the purposes of a club. The subscribers (who take three shares each) are—T. Spurrer, Norwood; A. H. Elsom, Anerley; C. Burton, Streatham; P. Phillips, Islington; W. Mannering, South Hampstead; S. J. Pipkin, Hendon; G. E. Scott, Brixton; E. E. Westmacott, Teddington; L. Wood, 100, Mina-road, S.E.

**THE DISTRICT OF CHEMNITZ TRAMWAYS COMPANY (Limited).**—Capital 50,000*l.*, in shares of 10*l.* To acquire a concession to construct, maintain, and work tramways in Chemnitz and neighbourhood. The subscribers (who take one share each) are—J. W. Greig, 15, Ellington-street; H. F. Munro, 4, Wyndham-place; E. Gibbins, Beddington; J. B. Corcanon, 17, Old Broad-street; R. Hulbert, 4, Birch-lane; J. Walker, 49, Gerrard-street; D. Rubinstein, 31, Oxford Gardens; F. Sharpe, Telegraph-street.

**J. BEARD AND COMPANY (Limited).**—Capital 10,000*l.*, in shares of 10*l.* The purchase of the interest of J. Beard in works at Dunkinfield, and the business of machine makers, and to carry on same. The subscribers are—S. Shofield, Ashton-under-Lyne, 50; T. Wainwright, Stalybridge, 5; J. Beard, Ashton-under-Lyne, 10; A. M. Crook, Manchester, 10; J. McG. Paton, Dunkinfield, 10; G. Collett, Ashton-under-Lyne, 5; W. H. Hall, Ashton-under-Lyne, 5.

**THE ERYRI SHIPPING COMPANY (Limited).**—Capital 15,000*l.*, in shares of 50*l.* The acquisition of ships and vessels for the purposes of trading. The subscribers (who take one share each) are—S. Jones, Glandinowie; H. Williams, Tyddyn Bach; Thos. Thomas, Min-y-Nant; J. O. Jones, Bronygraig; G. Jones, Llanberis; J. R. Williams, Llanberis; D. P. Williams, Llanberis.

**THE LONDON FOOD STORES (Limited).**—Capital 50,000*l.*, in shares of 2*l.* and 10*l.* To manufacture and sell to members, ticket-holders or others food provisions, both eatables and drinkables. The subscribers (who take one 10*l.* share each) are—General H. Nuthall, Oriental Club; J. K. Malcolmson, 11, King William-street; J. Doyle, 64, Pall Mall; G. C. Gilke, Abchurch-yard; W. Doyle, 43, Pall Mall; F. J. Hanley, 245, City-road; J. G. Cook, 10, Coombes-street.

**THE TETTERHALL LAND COMPANY (Limited).**—Capital 5000*l.*, in shares of 5*l.* To purchase land at Wolverhampton and any other property adjacent, to let, sell, or otherwise dispose of same. The subscribers (who take one share each) are—Sir W. Brett, Escher; J. Kincaid, 86, St. James's-street; T. M. Mackery, Leadenhall-street; J. M. Giliea, Thatched House Club; C. E. Davison, Twickenham; C. Selbey, 23, Queen Victoria-street; A. G. Gifford, 14, Monmouth-road.

**THE NEW SOUTH WALES MORTGAGE LOAN AND AGENCY COMPANY (Limited).**—Capital 1,000,000*l.*, in shares of 10*l.* To invest and lend money at interest on the security of real or other property in the colonies of Australasia or in other colonies or dependencies of Great Britain. The subscribers are—Sir Henry Barkley, 1, Bina Gardens, 100; George G. Campbell, 2, Bryanston-square, 100; G. R. L'Amey, 46, Onslow Gardens, 100; G. H. Palmer, 11, King's Arms-yard, 250; W. H. Staveley, Reading, 1; J. Upward, Enfield, 1; W. Berry, 11, King's Arms-yard, 1.

**THE ROCHEDALE PIONEER PERMANENT MONEY SOCIETY (Limited).**—Capital 5000*l.*, in shares of 5*l.* Doing the business of money lenders, advancing share-holders the amount of their shares by way of purchase upon every kind of available security. The subscribers are—J. Ball, Rochdale, 10; J. Turner, Rochdale, 6; B. Heywood, Rochdale, 5; R. Fenn, Rochdale, 2; W. Bamford, Rochdale, 2; D. Sibson, Rochdale, 4; R. Mills, Rochdale, 4.

**PHOSPHORUS IN COAL.**—The recent discoveries by Messrs. Thomas and Gilchrist as to the feasibility of dephosphorising iron in the converter by means of a basic lining, with which the phosphoric acid may unite and thus be separated from the iron, to the quality of which it is most prejudicial, will act advantageously on the employment of certain kinds of anthracite coal, which have hitherto been excluded from the iron trade, as containing too much phosphorus. Some of the Pennsylvanian anthracite beds have their value considerably detracted from by the amount of phosphorus in them, which has excluded them from the ironmasters' list; but there is no reason why, under the new dephosphorising process, they should not be available, and thus cheapen production still further in their respective localities.

The highest gold mine in the world is in Rio Grande county, Colorado; its elevation above the sea is 11,300 ft. Snow falls about every month; the fall is about 24 ft. per year. The atmosphere is dry and seldom chilly, though very cold. Absolutely cloudless days are common. The sun, moon, and more brilliant stars are frequently seen at noon-day.

## BRITISH MINES.

**EAST DARREN.**—Aug. 27: In the 104, east of cross-cut, the lode is 4 ft. wide, hard and strong for exploring, and yielding a little ore, saving work for dressing. In the 99, west of cross-cut, the end is all in lode, and ore throughout, worth 200 tons per fathom. In the 92, east of cross-cut, we have holed to workings wrought upon on tribute from the main lode, and discovered a branch or part of lode still remains to the south of our present level, which, as far as opened upon, contains

**PARYS COPPER CORPORATION.**—Thomas Mitchell, Aug. 27: No change worthy of notice since last report.

Mellaneur—76 in. ....	Millions	53.9
Mellaneur—Gundry's 8 in. ....		51.0
West Basset—Thomas's 60 in. ....		55.9
West Wheal Francous—58 in. ....		54.3
West Tolgus—Richard's 70 in. ....		51.0

The half-yearly report of the Mwyndy Iron Ore Company gives the net profit at 3500*l.*, but owing to the depressed state of the iron industries the directors deem it prudent to wait until the close of the year before paying a dividend. The debenture debt has been reduced to 10,200*l.*



Pant-y-Mwyn: the accounts for the twelve months ending June 30 last have been published. The credit side shows balance brought forward from June, 1878, 13767. 7s. 10d.; least ore, 17767. 6s. 6d.; sundries, 321. 1s. 11d. Expenditure—dividends in 1878, 10547. 19s.; costs, 27381. 2s. 3d.; including drawing and dressing ore, 7944. 4s. 7d.; machinery expenses, 131. 10s. 7d.; materials, 318. 19s. 5d.; coals, 2301. 0s. 5d.; royalty, 1667. office expenses, 2301. 0s. 21s.; directors, 1501.; cartage, 2284. 12s. 5d.; law costs, 5387. 11s. 8d.; thus showing a debit balance of 6087. 5s. The liabilities are—sundry creditors, 4417. 5s. 2d.; bills payable, 21007.; North and South Wales Bank, 14007. 5s. 8d. The unallotted shares amount to 18,802.

Combmartin, 7s. 6d. to 12s. 6d.; at the meeting a call of 1s. 6d. per share was made. The accounts showed a balance of liabilities over assets of 607. 6s. 4d. The report here was very promising, and the future costs are estimated at 857. per month. Clementina, 1 to 14; East Van, 17s. 6d. to 22s. 6d.; Glenroy, 7s. 6d. to 12s. 6d.; Gorse and Merilyn, 2 to 2½; Great Holway, 4 to 5. Leadhills have been in demand, and advanced to 2½. Tamar, 1½ to 1½; West Holway, 1½ to 1½; Caron, 2 to 2½; Frogoch, 1½ to 2; Gwynymynydd, 4 to 4½. Grogwinion, 2½ to 3; this mine sold 100 tons of lead ore this week, at 9½. 6d. per ton, being an advance of 16s. 6d. per ton over last sale. South Darren also made a good sale to-day, and realised about 30s. per ton better price. Hartington, 1½ to 2; Crosswood, 1 to 1½; Red Rock, 1½ to 2; West Wye Valley, 1½ to 1½; Wye Valley, 1½ to 1½.

FOREIGN MINES.—Blue Tent, 2 to 2½; clean-up at South Yuba, \$11,400. Cape Copper 27 to 29; Colorado, 1½ to 1½; Canada Gold, 2 to 2½; Eberhardt and Aurora, 1½ to 2½; Placerville, 2½ to 2½; Santa Barbara, 32s. 6d. to 37s. 6d. St. John del Rey, 265 to 275; the profit for the month of July, 58007. Don Pedro, 10s. to 15s.; produce cleaned up for first division of August 1100 oits. Frontino and Bolivia, 1½ to 2; the profit for June is 10597. 10s. 6d., after charging 3827. spent on capital account. New Quebrada, 1½ to 2½; Richmond, 7½ to 7½; Ruby, 1½ to 2.

The Market for Mine Shares on the Stock Exchange has fairly maintained its position as regards prices, although the return of bad weather has seriously interfered with the number of transactions. Yesterday evening and to-day, however, there has been a general improvement, and the opinion is widely expressed that permanent activity may now be anticipated. The position of the stocks of metals which have to be worked off perhaps does not justify any very sanguine views in this direction, but if it be accepted as settled that present prices are the lowest that will rule, and this now really seems to be the case, there is nothing to prevent good profits being realised on any amount of capital judiciously expended. Any permanent improvement in the price of copper or tin cannot reasonably be expected, and it is only to be hoped that the same remark does not apply to lead; but with regard to all metals it is speculation rather than legitimate business which is sending up prices, so that it would be better for miners to make their calculations on present rates, depending upon rises to add to profits and not to create them.

The Metallic Sulphides Reduction Company has been incorporated with a capital of 100,0007., in shares of 107. each, for the purpose of developing the inventions of Mr. John Hollway, which have been so often referred to in the *Mining Journal*, and which are again noticed in his paper read before the British Association, and published in another column. The conditions upon which the subscriptions are invited are such as should ensure success, and everyone interested in mining ought, at any rate, to take some interest in the company. Capitalists are fully protected against having, as is too often the case, to pay preliminary expenses in the contingency of insufficient capital being subscribed; for the prospectus states that unless one-half of the capital, exclusive of vendors' shares be subscribed in full there will be no allotment, and the money paid in will be returned in full, and it is further stated that no promotion money will be paid, and that all preliminary expenses will be borne by the patentees in the event of the subscriptions having to be returned. The prospectus states that the practicability of the process has been demonstrated at a considerable outlay by the various experiments that have been made. The economic advantages of the process are very apparent, because it has been proved that sulphides can be rapidly smelted by the combustion of some of their constituents by simply blowing air through the melted mass. No fuel is needed after once starting the operation, except what may be required for producing the air-blast, and even for this purpose fuel would be unnecessary in the many mining districts where water-power is abundant. Another important feature is that the heat generated by rapid oxidation of sulphides is sufficient, not only for their reduction, but also for that of a large addition of other ores not containing sulphur. This process will not only reduce the cost of treatment of ores containing copper, nickel, lead, silver, gold, &c., including those of poor percentage, but will enable many mines to be worked to advantage which, under the present system, are unremunerative, especially in districts where fuel is expensive and the cost of transport to market heavy. It is, therefore, anticipated that the process will be quickly adopted on a very large scale. A strong evidence in favour of the value of the process is to be found in the fact that a contract has been entered into for the use of the patents at the Rio Tinto Mines in Spain, and everyone is very sanguine of great results.

The Perran Silver-Lead Consols has been formed, with a capital of 15,0007., in shares of 17. each, to purchase for 40007., half in cash and half in shares, the Penhale and East Wheal Golden sets. The shares, with the exception of those taken by the subscribers to the Memorandum of Association, are to be first offered to the shareholders in the late Penhale United and Phoenix Silver Lead Mines, who expended between 50,0007. upon the property. The results were considered encouraging, and experienced miners were convinced that rich deposits of silver-lead ore would be obtained with a few fathoms more sinking. It is considered that of the above mentioned 50,0007. not more than 25,0007. was expended in actual mining operations, but a large outlay was made by a previous company, so that the works and plant as a going concern are estimated to be worth 20,0007. The property has been favourably reported upon by Captain Richard Pryor. The prospectus states that as the mines are under water the directors have been unable to verify his report, but they believe that full reliance may be placed upon his statements.

The Panama Canal project meets with no opposition in the United States, but it is stated that there has been no correspondence whatever with the American Government concerning Mr. de Lesseps' scheme. It was suggested in the *Mining Journal* of Aug. 2 that "if a little more time and money be expended upon surveys before even the exact route be determined upon it will be largely to the interest, pecuniarily, of the shareholders. Not only may a canal without locks be constructed across the isthmus, but even a tunnel may be avoided, and thus success will be assured, as the canal will have all the advantages and none of the drawbacks of the canal at Suez." This represents precisely the view entertained in the United States, where it was stated, before the failure of the French company was known, that "both the President and the Secretary of State believe, however, that Mr. de Lesseps and the Paris Congress have selected an impracticable route, and that the present scheme will eventually fall through the lack of financial support and for want of American co-operation. Admiral Amiel is very anxious that a commission of American engineers should be appointed to make a careful examination of the whole subject of an interoceanic canal. No action has been taken upon the proposal; but there is little doubt that it will be favourably considered, and that the commission of United States engineers will be appointed."

The Banque Européenne official announcement of the allotment indicates that a great success has been achieved. Applicants for 2 shares are to have 1 allotted to them; for 3 to 5 will have 2; for 6 to 10 will receive 4; for 11 to 25 will have 5; for 26 to 50 will get 6; for 51 to 100 will receive 10; and applicants for more than 100 shares will have one-tenth of the number applied for allotted to them. The return of the surplus deposits can be at once obtained, as well as the negotiable scrip for the shares allotted.

The Amador Volcano Gold Mining and Canal Company (Compagnie des Mines d'Or et Canaux d'Amador Volcano) have convened an extraordinary general meeting of shareholders for Sept. 17 for the purpose of receiving the report of the mining engineer sent out to report upon the value of the property, and afterwards to consider the proposition of the board for winding-up the concern. From this it would appear that the strictures with reference to the enterprise which have been published were not groundless.

The Old Telegraph (les mines de Bingham) reports are considered to be favourable. The Crédit National states that the new foreman, Mr. Charles Appleby, is well known and respected, and the general manager, Mr. Alexander de Maffey, has, they say at the mines, all the intelligence of sunny France. Alas, poor France! What will she now do (except invest in American mines), since all her intelligence has been exported to Utah? The Old Telegraph Mine is worked as fast as it can be. There are 140 men employed, the ore raised is of first-rate quality, and the more they progress the richer it becomes. The price of lead is rising, and the stocks of lead at New York are being reduced.

Port Phillip and Colonial, 1½ to 1½; the advice to July 7 state that the June profit was 9467. 8s. 10d., which with previous balance made 24527. 10s. 6d. available. The two companies divided 10007. of which 6507. was the Port Phillip share, and 3507. was remitted. There was a further remittance of 6007. on Aug. 25 for month ending Aug. 13. Yorke Peninsula, ¾ to ¾; ditto preference, ¾ to ¾; the manager (July 16) re-

ports that he had reached the eastern portion of the branch north of Morphet's lode at the 30, and that it was 1 ft. wide, of rich ore, and worth at the present price of copper 457. per fathom. He adds—"This is the most important report that I have ever submitted to you."—Ore Returns: On hand at June 1, 242 tons of 14 per cent.; raised during June, 15 tons of 16 per cent.; dispatched for sale, 100 tons of 17 per cent.; on hand July 1, 292 tons of 14 per cent., 500 tons of smalls of 5 per cent., and 1320 tons of dredge ore of 5 per cent. Scottish Australian, 1½ to 2; ditto new, ¾ to ¾; ditto old, ¾ to ¾; the London Colliery for the month of June amounted to 20,954 tons, making up a total for the half-year ending at that date of 120,621 tons.

St. John del Rey, 265 to 275; the latest telegram from the mines at Morro Velho, dated Rio de Janeiro, Aug. 23, states that the produce for the first division (11 days) of August was 12,500 oits., of the value of 4837., the lay of the ore being 63 oits. per ton. The profit for July was 58007. Don Pedro North del Rey, 10s. to 15s.; the clean-up for the first division of August was 1100 oits. Capt. Vivian (July 24) reports that as to drainage the water is in fork 9 ft. below the 40. In the No. 2 incline shaft excellent progress is being made in clearing and securing, but at present there is no sign of being to the end of the choke. In connection with the explorations at Bryden's, the ledge intersected by the rise has increased in size, and the quality of the ore is improved; they have opened on its surface from north to south 38 ft. At the north end the lode is small, but the south maintains its size and promising character. Altogether prospects are very favourable.

Canada Gold, 2 to 2½; the latest advices state that another shaft has been commenced. Gold returns are expected by next mail.

Richmond, 7½ to 7½; the usual telegram from the mines at Eureka, Nevada, states the week's run was \$25,000 from 440 tons of ore. One day was lost through the breakage of the crank. Furnace No. 3 is shut down for repairs, and No. 1 will take 10 days to complete repairs. During the week the refinery produced 1000 bars to the value of \$20,000. The manager (Aug. 6) reports that the mine and smelting works have been carried on with their usual regularity. The 201 cross-cut looks very favourable for ore. The drift south from No. 2 cross-cut has entered some very good ore; it is yet sufficiently developed to say what quantity of ore there may be at this point; according to the present outlook it is promising. All the machinery is in good working order.

Ruby, 1½ to 2; the Chairman (Mr. Malcolm) has recently inspected the mines, and is expected in England in about a fortnight. Mr. Longmaid has been appointed manager. In elucidation of Capt. Rickard's report that he considered the property of the Dunderberg Company in no way diminished in value through the past extraction of ore. As the mines are so extensive it is remarked that "the great body of ore extracted from the Dunderberg down to the 700 ft. level realised, it is said, 150,0007. sterling, and this ore is believed simply to have been taken from the footwall of the lode. Capt. Rickard recommends the driving of a cross cut at the 400 ft. level, so as to intersect the Home Ticket lode, which is supposed to be the hanging wall of the great Dunderberg lode, and the opinion of the experts who know the district best is that the hanging wall of the lode is much more likely to produce richer deposits, and in large quantities. The time required for driving out this cross cut would be from two to three months, and at this point the hanging wall of the lode would intersect at a depth of about 300 ft. the mountain rises rapidly on the Home Ticket side. The company's two other mines—the Lord Byron and the Valentine—are said to be of great promise, and can be worked by driving an adit."

In Hydraulic Companies Shares there has been but little doing, though the reports from the properties are encouraging. Blue Tent, 1½ to 2; a telegram dated Aug. 28 states that the clean up at South Yuba claim was \$11,400. The report from the Columbian Hydraulic Company's property is not very hopeful. Mr. Welton says that in 524 hours, ending July 18, they obtained at Malpaso \$734, at a cost of \$850. He explains that the great risk of opening at Malpaso at a deeper level arises from their uncertain knowledge of the direction and depth of the channel, and until something positive is known regarding these matters the risk of failure to obtain any satisfactory result is immense, and the carrying out of this work and finding themselves blocked by a wide bar of bed rock would be certain to absorb the last resources of the company. Under these circumstances it appeared most prudent to continue their present work. Cross cutting the channel, even at a slight loss monthly, so as to discover the centre and direction of the channel, the depth may then be ascertained by means of a shaft. He believes that the depth of the channel is not so great as supposed, judging from the slight curvature of the sand streaks, and in that case the sluices for opening at a deeper level may be brought up from the Claras river. In the meantime, with the hard gravel they have to operate upon, it is impossible to get large returns, although the gravel is without doubt excellent pipe-clay the gravel at Malabar, poor as it was, would have left a profit. Having now found better gravel, and without pipe-clay, it has appeared that their best prospect for present profit was to work this gravel.

Hullfall, 1½ to 2; the last shipment of lead was sold to the Parr Smelting Works at 117. 13s. 7d. per ton.

Lead Mine shares have been in probably greater favour than those of other classes, owing to the decidedly better prices being paid to the miners for lead ore. The important rise in the prices of the metal in America has already been noticed, and this improvement is naturally felt by the lead mines of this country, through a better feeling being produced. The parcel of Grogwinion ore sold on Monday showed an advance of 16s. 6d. per ton as compared with the previous sale, and to-day the South Darren ore was reported to have fetched 30s. per ton higher than the last sale, an announcement which caused quite an excitement amongst holders of lead shares. Gwynymynydd, 4 to 4½; the accounts from the mines are favourable, and notwithstanding the great floods in the district the engines have not been overpowered.

British Silver-lead, 2½ to 3; the south lode still continues working 307. per fathom. Plas-ddu Llanarmon, 5 to 9; the ground in No. 4 shaft on Maes-y-Pwll lode has improved for sinking, and is letting out more water, so we cannot be very far from the great deposit of ore. Westminster Bog Issa, 9 to 10; the water course has been cleared, and the washing-floors are nearly completed. They have laid the rails on the 40 yard level for bringing the ore to the shaft. The tribute pitches, six in number, are yielding very good ore.

Mineral Corporation, 1½ to 1½; the heavy rains have seriously interfered here as elsewhere with progress; the men have been unable to complete the new well, though the company hope to get it finished next week. With this exception, which is of course uncontrollable, everything is progressing satisfactorily, and a little fine weather would, it is believed, put a cheerful face upon the whole district.

Grogwinion, 2½ to 3; the 100 tons of lead sold on Monday realised a good price, it having sold at 4s. 6d. 11., being an advance of 16s. 6d. per ton over the previous parcel. The mine has been visited this week by several of the largest shareholders, who have expressed great satisfaction with their visit, as the prospects are brighter than ever before, and the lodes considerably richer in ore than they have been for years past. The deep levels continue to open out well, and the policy of the directors in securing the same, it being calculated to add many years to the life of the mine.

Frogoch, 1½ to 2; the recent storms which proved so disastrous in North Wales have caused a partial flooding of this mine, but no serious damage has been done beyond hindering the working in the deep levels. The powerful pumping machinery will, however, very soon overcome this, and in a few days the bottom will be dry again. It is stated that the prospects in the shallow levels are much better than were anticipated. Between the 24 and the 130 the best part of 100 men are employed getting ore on tribute, and as they progress fresh discoveries are constantly being made in this property. In many places ends which were deserted by the old men as being too poor and unprofitable have, upon being extended a fathom or too, opened out into good ore again, and the tributaries are making very fair wages. The deep levels are temporarily suspended until the flood water has been pumped out; but the lodes therein are looking well, and yielding a lot of ore. The dressing machinery is working day and night, and a large quantity of ore is accumulating ready for sale. Many parts of the mine are still inconveniently crowded with the tributaries ore-stuff ready broken, but this will be cleared away forthwith. Two of the directors have been stopping on the mine this week, and speak favourably of their visit.

Caron, 2 to 2½; the accounts from this mine are still encouraging, and capital progress is making in all departments. Wye Valley, 1½ to 1½. No fresh news this week. West Wye Valley, 1½ to 1½; good progress is being made at this mine. Red Rock, 1½ to 2; mine looking well, especially to the east, and prospects warrant a more vigorous development. It appears that the directors have recently asked their constituents to unite with themselves in providing a small additional sum to complete certain works which were commenced prior to the heavy fall in lead, the occurrence of which of course materially upset all financial calculations connected with mining. The amount required is small, under 20007., yet so apathetic are the shareholders that it is said only about half the sum is at present forthcoming. It appears to be the custom of the mining investor of the period to go in for shares at the starting of a company, and to draw a hard and fast line not to invest another shilling, be it required ever so badly. So great is this apathy that many prefer to gravely jeopardise the safety of their investment rather than to unite in a properly carry out their undertaking in a miner-like spirit. Through such inactivity many a good mine has been lost to its original shareholders, but generally to amply repay their successors, who, having the foresight to appreciate a good thing, stay in and secure that which has been so foolishly neglected. Mawston, 1½ to 2; good progress is making in sinking and driving, and the mine is opening up fully equal to expectations. Hartington, 1½ to 2; nothing fresh. Crosswood, 1 to 1½.

Pateley Bridge, ¾ to 1; the Rake vein, in the 50 east, is fast improving; the leading part of the ore course is fully 3 ft. wide, producing fine solid lumps of lead ore—the other portions of the vein (4 ft. wide) consist of the finest matrix that can be seen, and the indications altogether are such as to justify the manager in the opinion that this end is approaching a valuable ore body, which will be of considerable importance, having 35 fms. of back over this point. The same vein in the engine sump, now sinking under the 30 ft. level, maintains its improved character, being now 6 ft. wide, composed of gossan, quartz, carbonate of lead, and blue lead ore, producing of the latter 3½ tons per fathom, and improving. Further improvements have taken place in other parts of the mine.

Subjoined are the closing quotations:—

Asheton, ¾ to ¾; Carr Brea, 27 to 29; Devon Great Consols, 1½ to 1½; Dolcoath, 27 to 29; East Canadian, ¾ to ¾; East Van, 1 to 1½; Gwynymynydd, 4 to 4½; Glenroy, 7½ to 7½; Great Laxey, 10½ to 17½; Hartington Down, ¾ to ¾; Leadhills, 2 to 2½; Marka Valley, ¾ to ¾; Pateley Bridge, ¾ to ¾; Penstuthal, 1½ to 1½; Roman Ranges, 5½ to 8½; Rookhope, ¾ to ¾; Tankerville, 3 to 3½; Tincroft, 9 to 10; Van, 15 to 16; West Bassett, 4½ to 4½; West Cliverton, 2 to 2½; Wheal Crebor, 4 to 4½; Wheal Grenville, 4 to 4½; Alameda and Tivito, 3½ to 5½; Birdseye, ¾ to ¾; Blue Tent, 2 to 2½; Canada Gold, 2 to 2½; Cape Copper, 27½ to 28½; Chontales, 3½ to 5½; Colorado United, 1½ to 1½; Don Pedro, 10s. to 15s.; Eberhardt and Aurora, 1½ to 2½; Exchequer, ¾ to ¾; Flagaft, ¾ to ¾; Frontino and Bolivia, 1½

to 2½; Hullfall, 1½ to 2; Kapanga, ¾ to ¾; Pastarena, ¾ to ¾; Placerville, 2½ to 2½; Richmond Consolidated, 7 to 7½; St. John del Rey, 265 to 275; United Mexican, 2 to 2½.

TRAMWAYS.—The closing prices this evening, as quoted by Mr. W. Abbott, Tokenhouse yard, were—Anglo-Argeentine 4½ to 4½; Barcelona, 10½ to 11½; Bickenhead, 5½ to 6½; Ditto 6 per cent. Pref., 10½ to 11; Belfast, 7½ to 8½; Chester, 10 to 10½; Dublin, 11½ to 11½; Edinburgh, 14 to 14½; Glasgow, ¾ to ¾ prem.; Hull, 11 to 11½; Leeds, 10 to 10½; Liverpool, 10½ to 11; London, 11½ to 11½; London Street, 9½ to 10; North Metropolitan, 14½ to 14½; Provincial, 9½ to 10; Sheffield, 7½ to 7½; Sunderland, 9½ to 10½; Tramways Union, 6½ to 6½; Wolverhampton, 9½ to 10½; Hughes Locomotive and Tramway Works, 9 to 9½; Tramways and General Works, 6½ to 6½.

INSURANCE SHARES have, according to the evening's report of Mr. W. L. Webb, of the Stock Exchange and Finch-lane, been dealt in as follows: Commercial Union, 18½ to 18½; English and Scottish Law Life, 5½; Guardian, 6½ to 6½; Imperial Fire, 154½ to 154½; London and Lancashire Fire, 3½ prem.; Liverpool and London and Globe, 13½ prem.; Marine, 83 to 83½; Royal Insurance, 21½ to 21½ ex div.; Rock Life, 8; Queen's, 45; Standard Marine, 33-16ths prem. The Commercial Union pays an interim dividend of 5s. per share on Sept. 13, being the same amount as paid last year at this time. Railway Passengers are not quoted.

Subjoined are the closing quotations:—Alliance, British and Foreign, 29 to 30; Alliance Marine, 27 to 29; British and Foreign Marine, 12½ to 12½ prem.; Commercial Union, 18½ to 18½; Imperial Life, 22 to 24; Indemnity Marine, 93 to 95; Lancashire, 5-16ths to 5-16ths prem.; London, 60 to 62; London and Lancashire Fire, 3½ to 4 prem.; London and Provincial Marine, 1½ to 2½ prem.; Liverpool and London and Globe, 13½ to 13½ prem.; Marine, 80 to 83; Maritime, 2½ to 2½ prem.; Northern British and Mercantile, 44 to 45; Northern, 34 to 36 prem.; Ocean Marine, 13½ to 2½ prem.; Queen's, 2½ to 2½ prem.; Railway Passengers, 7½ to 8½; Rock Life, 7½ to 8½; Royal Farmers, 5½ to 6; Sea, 2 to 2-16ths prem.; Scottish Commercial, 15s. to 20s. prem.; Standard, 3½ to 3½ prem.; Thames and Mersey, 5½ to 6½ prem.; Universal Marine, 5 to 5½ prem.; Union Marine, 3½ to 3½ prem.

GAS SHARES.—The principal business in these shares, according to this evening's report of Mr. W. L. Webb, of the Stock Exchange and Finch-lane, has been in Bombay, 8 to 8-16ths; Continental Union (new), 1869 and 1872, at 11½; ditto, 7 per cent. pref., 22½; European Line, 17 to 17½; ditto, new ditto, 7½; Gas Light and Coke, A, 174½ to 175½, ex div.; ditto, 4th issue, 17 to 17½; ditto, ditto, 5th issue, 18½ to 18½; ditto, ditto, 7 per cent. maximum, 131 to 131½; Imperial Continental Gas, 173 to 174; London, 170½ to 170½; Phoenix, 34 to 35; Para, 4½ to 4-16ths; Rio de Janeiro, 27½ to 27½. There has been a demand for gas stocks, especially Imperial Continental, which has improved 2 per cent. The closing prices are as follows:—Bahia, 13 to 13; Bombay, 5½ to 6½; ditto new, ¾ to ¾ prem.; Commercial, 175 to 183; Continental Union, 17 to 18; European, 16½ to 17½; Gas Light and Coke, A, 177 to 182; ditto, 4th issue, 17 to 18; ditto 5th issue, 18 to 17; ditto 10 per cent. pref., 205 to 210; ditto 7 per cent. maximum, 130 to 134; Imperial Continental, 169 to 174; London, 169 to 173; Oriental, 6½ to 7; Para, 4½ to 5; Phoenix, 33 to 35; Rio de Janeiro, 26 to 28; Surrey, 17½ to 18½; South Metropolitan, 192 to 197.

\*\* With this week's Journal a SUPPLEMENTAL SHEET is given, which contains—Original Correspondence: On Safety Lamps; Experiments with Miners' Safety Lamps; the History of the Safety Lamp; Rock-Boring Machinery; Patent Hand-Power Rock-Drill (T. B. Jordan, Son, and McIlhenny); Wheels for Water Motives; Alleged Discovery of Potash Salts (P. Sorochley); Wrights and Measures—the Ton of 21 cwt.; Copper Reduction (W. T. Rickard); Lake Superior Copper Mines; New Zealand Kapanga Gold Mining Company; Monopoly of the World's Consumption of Steel by Swedish Lapid (W. J. Thompson); Mineral Statistics of the Mining Record Office (W. J. Thompson); Treatment of Tin Ores (R. Southey); Sales of Tinstone from Cornish Mines; Mines of County of Cork (W. Thomas); Lead and Lead Mining—No. II.; Panora; Penstruthal Consols (E. Ashmead); Tankerville Mining Company; the Lead Trade; Scotch Mining Share Market—Weekly Report and List of Prices; Foreign Mining and Metallurgy; Far West in Colorado; the Wild Duck, or Sportsman's Arms.

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Messrs. GRANT and WINDUS, Publishers, 74, Piccadilly, London; or by post from  
the Owner, DAY MacDONALD, 119, Hope-street, Glasgow.

## THE RECENT BLANTYRE COLLIERY EXPLOSION.

**THE RIGHT HON. R. A. CROSS**, one of Her Majesty's Principal Secretaries of State, having thought it expedient that, as the Enquiry by the Fiscal is only directed to the question whether criminal proceedings should be taken against anyone, and does not necessarily touch many important questions as to the administration of a Pit, there should be a FURTHER INVESTIGATION into the causes of the FATAL EXPLOSION which occurred at the BLANTYRE COLLIERY on the 2nd July last; and having, under the 48th Section of the Coal Mines Regulation Act, 1872, appointed me, one of Her Majesty's Inspectors of Mines, to be a Commissioner to hold such an Enquiry, Notice is hereby given that I will, on Thursday next, the 4th September, attend at the Court House, County Buildings, Hamilton, at half-past Ten o'clock in the forenoon, when ALL PERSONS CONCERNED are requested TO ATTEND and GIVE INFORMATION.

JOSEPH DICKINSON.

Pendleton, 28th August, 1879.

### Notices to Correspondents.

\* Much inconvenience having arisen in consequence of several of the Numbers being the past year being out of print, we recommend that the Journal should be filed on receipt; it then forms an accumulating useful work of reference.

SIR,—Will any reader kindly favour me, through the Journal, with a list of the Australasian Mines and Smelting Works, giving the address of the Secretary of each?—INQUIRER.

SOUTH DARTON.—With reference to Messrs. Watson Brothers' remarks, in last week's Journal, I beg to say that my letters are written by myself, though, of course, they contain facts relative to South Darton which I obtained at the office as a director of the company.—THOS. BUSH, Farnborough, Kent.

Capt. Knapp on the Science of Mining shall appear in next week's Journal.

Received.—"D. P. M." (Newcastle)—"S. M. P." (City)—"Shareholder" (Penrith)—"See Mr. Ashmead's letter in another column"—"Shareholder" (Bath)—"S. G." (L. S.)—"Correspondent" (Gundagai)—"H. N." (Middleborough)—"Nickel-Gold"—"Old Correspondent" (Newport)—"Shareholder" (Huntington); Should write to the secretary of the company—"Euclid" (Bristol): We could not afford space for such a contribution; besides, it would provoke endless correspondence and trouble without being of advantage to anyone.

## THE MINING JOURNAL.

Railway and Commercial Gazette.

LONDON, AUGUST 30, 1879.

### THE ROYAL COMMISSION ON EXPLOSIONS IN MINES.

#### SUDDEN OUTBURSTS OF GAS.

The results of the labours of the Royal Commission on Explosions in Mines, appointed a short time since by Her Majesty's Government, it is almost needless to state is looked forward to with no ordinary interest by the owners and managers of mines. In the majority of explosions that have taken place by which hundreds of lives have been lost no satisfactory evidence has been elicited as to their cause. It is true the leaders of the miners have persistently stated that they have principally resulted from defective and deficient ventilation, for which the owners and managers should have been held responsible, and have requested the Government to intervene, and so alter and add to the Act of 1872 by increasing the liabilities of mineowners and officials, as if they were guilty of any laches in connection with mining disasters. But the accounts of the accidents which have recently taken place show that many of the workmen in mines have been most reckless, having open lights in places where gas was known to be, but even smoking in an explosive atmosphere; yet irrespective of these assumed causes there are others equally as dangerous which have not received that amount of attention from those who presume to speak with authority on the subject of mining accidents or fatalities, and who hold that explosions generally are due to inadequate ventilation, and are, therefore, preventable, only requiring the carrying out of the laws for rendering noxious gases harmless, with which all managers of mines are supposed to be familiar. These men do not appear to take into consideration the great changes which take place as minerals are worked at increasing depths, for the deeper shafts are sunk the more gas has to be encountered. But a still greater danger than that from the gas issuing in the ordinary way from the strata being moved has frequently been met with that no amount of ventilation or vigilance can anticipate, and that a sudden outburst which at times takes place from the roof or floor, by which vast areas without the slightest premonitory symptom or warning have been entirely filled with gas, extinguishing all the safety-lamps where such were used, and in the event of an open light being anywhere near inevitably leading to an explosion. These sudden outbursts we find have been more frequent in the southern part of the West Riding of Yorkshire than in any other part of the kingdom, for at most of the mines the strata worked, as well as the roof and floor, give off at times a good deal of gas. In some instances we have had to record that the gas had come with all the force of a high-pressure engine, and able to foul a current of fresh air passing along at the rate of 20,000 cubic feet per minute, lifting the floor with a power equal to 30 lbs. to the square inch. Since these took place others of a similar nature have occurred at different mines even up to nearly the present time, and so interesting and important have these phenomena been considered that the closest attention has been paid to them with a view to tracing their source and cause. The Midland Institute of Mining Engineers has also devoted a great deal of time to them, and the late Chairman, Mr. T. W. EMBLETON, one of the first mining engineers of the day, has collated the particulars connected with most of them for the purpose of presenting a copy to each member of the Royal Commission on Explosions in Mines, which was appointed specially to consider the influence of atmospheric pressure upon the issue of gas, the best mode for indicating the presence of fire-damp, and preventing its accumulation, &c. The information obtained by the Midland Institute is the first that has been collected upon the subject from managers and viewers who were present on the occasion of the outbursts, and as far as could be done traced their sources and force, so that its importance will be recognised and appreciated not only by those engaged in mining operations but by the members of the Royal Commission as well as a most valuable acquisition bearing on the momentous subject they have been delegated to inquire into. As we previously noticed the outbursts which took place at the Strathford Main Colliery and the Oaks we now purpose to give a few particulars as to those which have taken place recently, more especially as regards those about which there are some special and interesting features which will be appreciated by mining engineers as well as managers of mines.

One of the most recent outbursts of gas took place on April 9 last, at the Thrybergh Hall Colliery, near Rotherham, where the coal worked is 8 ft. in thickness, the particulars of which were supplied by Mr. EMBLETON. The roof of the mine was composed of strong grey bind, and was on the "weight" when a quantity of gas issued from between two banks, the post between the two being entire, and came from both the roof and the floor, the split of air in that division of the mine at the time having been about 6000 cubic feet per minute, and was joined at no great distance by another current of 5000 feet per minute. The gas backed the air for a considerable time, fired at a lamp, continued on with the current, and the gas was found with the lamp after the two currents alluded to met together. The issue of the gas got less, and by May 1 ceased from both roof and floor. An examination of the workings was then made, and it was found that there was a fissure in both the floor and the roof, which passed in at an angle of 25°. The roof had fallen for some distance, and a gate was lifted up 2 ft. higher than its original position at the top of a post, while the "pack"

was thrust out at the bottom—at the top being 6 ft. 4 in. from the post side, and at the bottom 5 ft. 6 in. The district where the occurrence took place had been examined by the deputy less than two hours before, when all appeared quite safe as usual, the first indication of "weight" having been about nine o'clock, when the miners' lamps were extinguished. The barometer on the morning of the outburst was at 29.5 inches, and had been rising during the two previous days after a sudden fall. The gas did not come from the goaf, and with respect to all the outbursts reported to the Institute by its members, it appears that none of them had any connection whatever with the goaves. No pressure that could be applied to the floor of the goaf by any fall that could take place would cause gas in the goaf to pass into the floor and come out at the fissure alluded to. Mr. EMBLETON said there were two causes that would tend to an outbreak of gas—one was the pressure of the coal upon the floor, which was caused by the roof pressing upon the coal in the first instance; the next was that the pressure of the existing gas in the roof and the floor had sufficient power, after the former operation had taken place, to form an exit for itself. During the whole of the time the gas issued from the fissure—from April 9 to May 1—the men were withdrawn from the workings, and no one allowed to go near the place but the deputy, so there was no injury whatever to any person, and the men returned to work when the reservoir of gas was exhausted.

At the Mitchell's Main Colliery, near Barnsley, where the Nine-foot seam of coal is worked, an outburst took place in November of last year, as well as one previously—in 1877. The latter was a singular one, and took place in a part of the mine where no gas had been before met with. A number of men were engaged in driving a dip-board to a throw, and when within a few feet of it their progress was arrested by a sudden noise resembling the report of a cannon. The men at once ran towards the bottom, and had barely escaped when the roof fell in. This was followed by an outburst of gas and water so suddenly that the men had not even time to gather their clothes as they moved away. The deputies were at once informed of what had taken place, and they at once, taking all necessary precautions, proceeded to the spot, and made an examination. They found the level was flooded with water to the extent of from 18 to 24 in., being charged with gas as far as the main intake, which was about 60 yards from the board, which was driven about 20 yards down. The gas and water continued to issue for four days, when it abated altogether. On examining the place after it was clear of water and gas it was found that the roof had guttered up to a considerable height. In this case there was no evidence to show where the gas came from. The second explosion at Mitchell's Main took place in November last, when a number of the men were employed in a range of long-wall faces about 500 yards from the pit bottom. The men at once gave an alarm that there was a great quantity of gas in the working places, and that all the lamps excepting one had been extinguished. The gas extended over an area of about half an acre, forcing back the intake air for a considerable distance. At the time of the outburst something like 18,000 cubic feet of air was passing through that part of the workings, and no gas had been seen previously. The pack-roads and gates showed no indications of any "weight" or fall of roof, nor were the men warned by any peculiar noise until immediately preceding the outburst. For about an hour before the occurrence there was a slight rumbling noise, when one of the lamps went out in a working place, and one near to it was filled with gas. One man said he heard a slight rumbling noise, and after that felt the floor lift two or three times, while there was a noise as if some coal had fallen. Some of the men stated to their fellows that there was a quantity of gas coming from somewhere, so the men in several places went out, while several men continued at work, being ignorant of what had taken place. Every place was afterwards examined, and the goaves were found to be well charged with gas. On the following day a further examination was made of every place and goaf, and they were found to be all free from gas, and in all respects in good condition. None of the pack-gates were at all injured, or showed any signs whatever of a fall in the roof. No fissure appears to have been found, as has usually been the case. As to fracture, it was stated by Mr. EMBLETON that certain pressure would cause a fracture to the floor, but it did not follow that the fracture should extend to the roof, because the roof, when the coal was excavated, was in every way distinct. Were similar force applied to the roof there would be a fissure in it, but no fracture of the floor, but all cases could not be connected in that way, for if the floor was disturbed by pressure from below that was equivalent to the displacement of so much of the floor, and if that displacement was sufficient to affect the bearing powers of the packs and the props and chocks, then the roof would be affected, but the roof could only be affected in that way. If the pressure was from below then the floor was affected, and the roof could not be disturbed except in the way described. As to outbursts from the floor, where one came from a goaf that had been finished for some time, we are told there was not any traceable fall of the roof about till a crack in the floor which had been seen for months gave out the gas that way. The crack had thrown the bottom up, but it had not thrown the timber out. There was no fall of the roof in that instance, and the gas was issuing out of the crack for some months. In the case at Mitchell's Main the rumbling noise heard by the men would lead one to suppose that it was caused by the breaking up of the floor, yet, strange to say, no crack or fissure was found in it after the closest examination. In such instances as these one cannot see how such large quantities of gas could come out unless from a fissure, but the matter is one that scarcely any of our ablest engineers can do more than hazard an opinion upon, but now that it has been taken up as it has been by the most eminent mining experts we have no doubt but what it will occupy a great deal of their attention for the benefit of all persons in any way interested in the safe working of our mines.

Another outburst occurred in March last year at the Corton Wood Colliery, one of the largest in South Yorkshire, and where the drawing and other shafts are no less than 20 ft. in diameter. The particulars were furnished by Mr. JOHN HIGSON, the eminent mining engineer. The colliery was a comparatively new one at the time of the outburst, so that there were no goaves of any extent, and as the height from roof to bottom was fully 8 ft., there was plenty of room for a large current of air, which was obtained by means of a Schiele fan. The daily records of the ventilation showed that from 130,000 to 140,000 cubic feet of air per minute passed through the mine, about 90,000 ft. of which passed through what was known as the dip slants. These slants were three in number—one for the intake air, and two for the return air current, and had attained a distance of about 800 yards from the shaft, whilst the average size of the airways was 90 ft. About six o'clock in the evening of March 6, without any indication whatever, an outburst took place in the dip slants, and although the fan was put up to the highest velocity at which it was deemed safe to drive it for two hours, it was utterly unable to prevent the atmosphere from being inflammable in the fan drift, though the volume of air passing through could not have been less than 220,000 cubic ft. per minute. In the seam of coal worked—the well-known Barnsley—the men used the Stephenson lamp only, and it being the night shift there were only 27 working in the district where the outburst occurred. Every light was put out as soon as the explosive mixture came in contact with it, excepting three that were in the first portion of the intake, the air from which point traversed through the workings in which the 27 lights were in use, and so on to the upcast shaft. The workmen made to the main-engine slant, and from there worked their way to the pit bottom against the fresh air, so that none were injured. After careful examination the point of outburst was an open joint or fissure running at right angles with the main slant, and extending right up to the measure forming the roof of the mine. A considerable quantity of water accompanied the gas, but the whole was cleared in less than three hours from the time of the intrusion.

It is clear that these sudden outbursts come with such violence and the gas in such vast quantities that no possible amount of ventilation could at once clear it, or render the places near where they take place safe for the workmen, whose only chance is immediate

escape after receiving warning by the extinguishing of the safety-lamp. The question is indeed fraught with the most important consequences, and the mining community at large, as well as the members of the Royal Commission, cannot but feel indebted to the Midland Institute of Mining Engineers for the valuable information which has been obtained through it on a subject of such vital importance in connection with the safe working of mines.

### IRON TRADE PROSPECTS.

The animation (may we not say the remarkable animation?) apparent in the American iron trade has made its influence felt to some extent during the last fortnight in metallurgical circles upon this side of the Atlantic. There is an old saying that when apples are dear crabs will sell; and upon some such principle as this it appears to be concluded that when iron is freely disposed of upon the markets of the United States it will also sell more readily in the markets of the United Kingdom. Certainly in the present condition of the American iron trade the United States are not likely to be very bitter competitors upon such markets as those of Canada, South America, and Australasia; but we are not all equally clear that we shall command a large sale for our iron upon the markets of the United States themselves. Still it is a good deal to be relieved from the fear of bitter American competition in British America, South America, and Australasia. That our ironmasters have now a better chance of securing a market for their rails in Canada is seen in the single fact that large contracts have been just given out by the Dominion Government to various English firms and companies. With American rails selling at the prices which they now command it was clearly impossible for the Canadian Government to look to the United States for the permanent way material required for the Canadian Pacific Railway; and we think we may fairly infer from this circumstance that the Protectionist régime in force in the United States is really a misfortune to the American iron trade. Protectionist duties really enervate the industry which they are professedly intended to protect. Thus, although the price of American iron is maintained by Protectionist duties at a very high level upon American markets, that very fact renders the American iron trade unable to compete with British ironmasters upon the unprotected markets of neighbouring countries.

Free trade renders British metallurgy robust and self-reliant, while Protection renders American metallurgy, after all, comparatively weak and helpless. This may appear a bold assertion to make in presence of the obvious facts that the metallurgy of the United States is now in a thriving condition, while that of Great Britain is in a struggling and profitless state. But it must be remembered that, from the sheer force of surrounding circumstances, the iron trade of the United States is very differently situated as compared with our own. The United States comprise so vast a region that they may almost be said to be a world in themselves, and for the present at least they afford an ample market for the products of American blast furnaces and rolling-mills. But Great Britain, being of limited extent, is compelled to seek a market for her iron and other products in other countries, and, therefore, it is clear that she should proceed upon the principle of robust self-reliance upon her own exertions. This is nothing more or less than free trade. If British ironmasters were "protected" by a régime which guaranteed them 114 per ton for their rails they would not only be unable to sell their rails at home, but they could not find markets for them abroad. With the United States the case is somewhat different. They are in truth a new world, and this fact conceals the evils of the protectionist régime from which American metallurgy really suffers, although perhaps unconsciously. For the present the American railroad interest is prosperous, and therefore all goes well with American rails. But if the demand for rails on the part of American railroad companies should fall off American ironmasters would at once feel that Protection had done them more harm than good.

### ELECTRICITY AS AN ECONOMIC MOTIVE-POWER.

In combatting the opinions of Sir W. ARMSTRONG, Professor JEVONS, and others as to the probable duration of our coal fields, we have pointed out that these gentlemen in their calculations did not take into consideration the discoveries that might be made by which a motive-power independent of fossil fuel would be brought to light. Our views have been fully corroborated during the meeting of the British Association at Sheffield, and those who were present at the lecture given by Professor AYRTON, on Electricity as a Motive Power, could be otherwise than convinced that electricity was to be the motive-power of the future. The lecture was happily illustrated, and machinery in the hall was put in motion driven by power derived from a distance. By the use of electricity the waste of power in transmission could be reduced for any distance to not more than 30 per cent. of the whole power absorbed at the generator, so that the employment of steam-engines of vast size outside a town like Sheffield would be by far the most economical means of extracting the energy out of coal. Small steam-engines were told were the most expensive, for it was at least four times as expensive to produce power from them as from large ones. But electricity not only produced motive-power, but heat and light, and by it they could heat from a distance a coil of iron wire white-hot, and by putting it into a vessel filled with water the latter in a short time would begin to boil. Here we have simplicity itself in the generation of steam. In connection with power, the question of cost is a most important one, and in this there is a great advantage in favour of electricity, which could be sent to where it was required, the same as gas or water, and regulated equally as easily. As to light, it appears that if there was a large quantity required in one place that by electricity was twenty times cheaper than coal, whilst Sir W. THOMPSON went so far as to say that it might be made 133 times cheaper.

In the pounds, shillings, and pence side of the question the Professor showed that the saving in lighting, heating, and motive power in Sheffield alone would be something enormous were electricity adopted. He stated that the cost of using gas in Sheffield for the lighting of streets, public buildings, and factories, could be halved if electric currents generated by water engines worked by hill streams, as well as by very large steam-engines, were substituted for gas. And if they added to that half of what it cost forges for heating purposes by substituting electric currents generated by very large steam-engines at certain points, and with turbines driven by the fallen water outside the town, they would effect a saving at the rate of about 45,000l. a year; and if the cost of producing motive power could by the same means be halved they would represent an annual saving of something like 60,000l. But this saving he believed would be much larger, since not only could power be produced much more economically than by small steam-engines, or even by a large one, when a large proportion of its power was as now wasted in driving the shafting alone in their factories; but in addition to that much hand work could be economically replaced by machine work. And if the consumption of coal in Sheffield for heating their metals and houses could be halved then there would be another saving of about 300,000l. a year, or altogether there would be an actual saving that could be effected in Sheffield alone, by substituting electricity for coal, of something like the large sum of 430,000l. This shows with even our present knowledge of electricity how really economical it is as against coal, and that it must ultimately be made available for many purposes for which coal is now solely used. Steam for every purpose can be superseded by the force of electricity, for we find that last year two French engineers, MM. CHRETIEN and FÉLIX, ploughed fields by electricity, the current having been produced by two dynamo-electric machines of a form invented by M. GRAMME. Those machines, it appears, are usually worked by a steam-engine at some convenient place 300 or 400 yards away, and the electrometers were also two GRAMME machines—one on each side of the field, with their coils revolving backwards. Through one of these the electric current was sent alternately, so that motion was given to one or other of two large windlasses, one on each of the wagons containing the electro-motors. We can heartily re-echo the concluding remarks of Prof. AYRTON that in the next century electricity might

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undo the harm steam during the last century might have done, and the future workman of Sheffield would, instead of breathing the impure air of crowded factories find himself again at the hill-side, but with electric energy laid on at his command. Of the many important subjects brought before the Association we think that relating to electricity second to none; and, now that the public mind has been so far enlightened by the interesting narrative and practical illustrations of Prof. AYATON, we feel sure that there will be a growing desire to know more about it. We also hope that the time is not far distant when we shall have electricity adopted at some of our large works as the active motive power—for when once it is introduced it would soon make its way, and be an accomplished fact as the real economic motive power of the day.

#### SAFETY-LAMP EXPERIMENTS.

Reference was made in last week's *Mining Journal* to the experiments at Brynau, near Wigan, before a number of the members of the Manchester Geological Society, with a view to show the superiority of the new lamp designed by Messrs. Ashworth and Smethurst, and it may be mentioned that amongst those present were Messrs. T. Ashworth, Manchester; W. S. Barrett, Pemberton; H. Baxter, Tyldesley; H. H. Bolton, jun., New Church; Jas. Bowker, Walkden; Wm. Bryham, jun., Wigan; T. Byrom, Wigan; Wm. Ascroft Byrom, Wigan; A. Burrows, Atherton; J. S. Burrows, Atherton; J. Casartelli, Manchester; C. Cooke, Moston; H. Cowburn, Westleigh; S. Crowther, Bolton; — Crowther, Bolton; U. E. Dickinson, Manchester; Chas. Dixon, Westhoughton; R. Drinnan, Outwood; W. R. Ellis, Wigan; F. Fletcher, Atherton; J. Gerrard, Barnsley; W. L. Grime, Garswood Hall Colliery; J. Hall and W. H. Harbottle; Orrell; Charles Hardwick, Moss Side; John Howell, Great Boys, Tyldesley; Isaiah Johnson, Unity Brook Colliery; S. Lees, Manchester; William Johnson, Manchester; J. Longbottom, Pemberton; J. S. Martin; the Rev. W. J. Melville; S. Nall, Rochdale; George Pearce, Astley and Tyldesley Colliery; J. Plant, Salford; J. Radcliffe, Ashton-under-Lyne; Capt. Reif, Newton; J. F. Seddon, Durham; J. Sixsmith, Syndall Hall Colliery; J. H. Stephen, West Leigh; J. Tonge, Hulton; R. Unsworth, Worsley; John Wallshaw, Astley and Tyldesley Colliery; W. Warburton, Norbury Colliery; S. B. Walls, Bolton; George Wild, Barnsley; J. Wild, Kearsley; T. M. Yates, Horwicks, and others. Gas was extracted from the 6-ft. and 9-ft. mines, and conveyed by means of pipes to the surface, where a model of a coal mine, consisting of two levels, a cut through of 12 in. by 6 in. section, and three drifts out of the top level 12 in. by 12 in., with a brattice up the centre, with glasses placed in the sides in various places, to enable those present to observe the effect produced when an explosion occurred, was constructed. Arrangements were also made whereby the current of air could be increased to a velocity over 1000 feet per minute, and the gas was so completely under the control of the operator that he could turn it on or off at pleasure.

Opinions differ as to what are the points of a good safety-lamp, but it is generally admitted by authorities in mining that a lamp to be perfect must be constructed so that it can easily detect the presence of gas, so that it cannot be tampered with by the workmen, will go out with the workman in case of danger, and at the same time be the least liable to danger. For the use of the managers and firemen a more sensitive lamp is desirable—in fact, a lamp capable of retaining its flame as long as possible without being communicated to the explosive mixture outside the gauze. To find out which of the lamps now used approached closest to those standards was the object of the experiments. Mr. Smethurst's lamp is a modification of the Mueseler, but Mr. Smethurst's lamp obtains its air from the bottom of the lamp. No gauze is exposed in Mr. Smethurst's lamp, a thick glass ring surrounding the light, while the cap from the glass to the top is made of brass. It was pronounced by all to be a very capable lamp, and the results of future experiments with it will be watched with interest.

The experiments subsequently made with coal dust, and proved conclusively what a dangerous element it is in explosions. The dust heats the gauze very rapidly, and when the current of air was strong easily forced the flame through the gauze of a Davy lamp. Not content with those results, Mr. Smethurst produced a miniature explosion in a model set of workings, and showed that the place where most damage was caused was the point furthest from the intake of fresh air and gas. An excellent luncheon was served after the experiments, which made the trip to Brynau a very enjoyable one.

**FATAL COLLIERY ACCIDENT—GOVERNMENT PROSECUTION.**—Joseph Barnett, was killed by a fall of roof at Aspinshaw Colliery. The deceased had been allowed to work in his "shop" after the props had been drawn; and the assistant deputy fireman admitted, in cross-examination by Mr. Stokes, that he had neglected to place a danger signal at the entrance to the "shop," or to fence it off, contrary to the 14th section of the Mines Regulation Act.—The jury decided not to return a verdict of manslaughter against Daniel Bradbury, the assistant deputy fireman, the Coroner and the Inspector having previously intimated that the owners and management would be prosecuted for incompetent management and gross negligence.

**COLLAPSE OF A COLLIERY SHAFT NEAR WIGAN.**—A serious accident has occurred at the Strangeways Hall Colliery, near Wigan, through the collapse of the shaft, whereby a portion of the headgearing and sides fell to the bottom, a distance of 500 yards. The alarm created in the workings, caused by the sudden rush of air, was intense. The noise of the falling debris is described by one collier as being like clap after clap of thunder, and all lights were speedily extinguished, by the great rush of wind. Many of the men were afraid for some time to approach the pit mouth; but the officials of the colliery, as soon as it was fully realised what had happened, hastened to bring all the men out of the Six-Foot mine, and also out of the upper seam, the Four-Foot mine. As regards the latter mine the ventilation was not so dangerously affected, but it was deemed advisable to clear both mines forthwith. Most of the men and boys came out of the pit as they left off work—shirtless, their clothing, &c., being left behind. In about an hour all the men had been safely withdrawn from the workings. The downcast was known to be in a dangerous state, as a man had been at work in the shaft pointing the brickwork. Fortunately he happened to be out when the occurrence took place. The pit presents a ruinous aspect, being in appearance like a deserted colliery of some years standing. All the headgearing fell, but not down the shaft. For upwards of 400 yards from the top there is no obstacle, though for many yards in some places there is no brickwork left. Subsequent, Thomas Ralphs, underlooker, and a fireman were examining the mine to see how far the pit had been filled, in order that it might be ascertained whether the seams could be ventilated, when another fall of dirt took place, burying both men. The fireman escaped, but Ralphs was killed. The men had only one lamp with them, which was extinguished, and some of the jury thought that if there had been another lamp it might possibly have been the means of saving the deceased.—The manager said his instructions to the men were not to go too near the shaft, and as the pit was making some gas he considered there would be less risk if they had only one lamp with them. The Coroner said it appeared to him that the men had been too venturesome, but no doubt it was owing to their over-anxiousness to obtain information as to the state of the shaft. Mr. Hedley, Government Inspector of Mines for the district, said that was generally the case with underlookers and firemen, who were always very desirous of getting all information they could for their superiors.—A verdict of Accidental Death was returned.

**DODWORTH AND SILKSTONE COAL AND IRON COMPANY.**—The dispute between the vendors of the Dodworth and Silkstone Iron and Coal Company and the shareholders seems likely now to be settled. On Tuesday a meeting of the shareholders of the company was held in Manchester, when a proposition was made that they should accept a proposition made by the vendors, with a view to the settlement of the dispute which has existed for some considerable time, and agree to invest about 21,000*l.* of the mortgage debentures held by them in a trustee for the benefit of the shareholders

*pro rata*, and also cancel their fully paid-up shares, amounting to about 50,000*l.* This proposition was ultimately agreed to by the meeting, and the proceedings were adjourned until October in order to enable the arrangements to be carried out.

#### MINERAL AND METALLURGICAL INDUSTRIES OF ITALY.

The greater part of the minerals raised in Italy are exported, as, owing to the absence of true coal beds, the smelting is limited throughout the kingdom. From the *Annuario Statistico* for 1878 it appears that there were exported in the previous year 236,667 tons of iron ore, 9616 tons of copper, 27,531 tons of lead, 78,255 tons of zinc, 7375 of manganese, and 210,327 tons of sulphur. The fuel resources of Italy comprise a few beds of anthracite coal of very limited area, and some beds of lignite of tertiary, eocene, and miocene age. These are found at Valdegno, near Vicenza, Grosseto, Murlo, near Siena, Sarzana, near Spezia, St. Giovanni, near Florence, Candino, near Bergamo, and at Gonesse, on the south-western coast of Sardinia. There are also considerable deposits of peat at the foot of the Alps of which over 90,000 tons are annually raised. The total quantity of iron ores melted in Italy probably does not exceed 45,000 tons per annum; but it is difficult to get at the production of iron or steel, as the manufacture is carried on in a number of little furnaces and forges scattered about Lombardy and Central Italy. The average production of steel of the best quality is about 2500 tons. The following table shows the progress of production from 1871 to 1876:

The production of metallic copper is about 300 tons per annum. There is an establishment founded in Genoa for the extraction of silver from lead ore.

**METAL PRODUCTION IN GERMANY.**—The statistics of production for 1878 show very favourably in comparison with those of the previous year, considering the depression of trade, which affected Germany not less than other countries:—

	1878—Metric tons.	1877—Metric tons.
Pig-iron .....	2,124,444	1,955,579
Zinc .....	94,954	90,362
Lead .....	84,372	80,278
Copper .....	9,541	8,362
Tin .....	831	831
Antimony .....	1,245	930
Coal .....	39,429,308	30,423,774
Lignite .....	10,971,117	10,644,427
Asphalt .....	47,329	29,735

**GOLD IN INDIA.**—Mr. Brough Smith, the mining engineer employed by the Government to examine the Wynad gold fields, has visited Simla to make a personal report on the matter to the Viceroy. He has arrived at the opinion that not much gold is left in the alluvial deposits, but that the quartz of that district contains precious metal in greater proportions than do many successfully worked Australian reefs. The failures which have hitherto occurred he attributes to the want of proper appliances, and the mistaken way in which operations have been conducted.

**GOLD FIELDS IN GUINEA.**—The Liverpool Post states on good information that the enormous richness of the old gold fields on the Guinea coast has not been exaggerated in the reports received during the last ten months. To one of our African merchants, who has had a mining engineer at work for upwards of twelve months, a prize has fallen of probably untold value. Sir John Glover's statement that he had travelled over districts where one might dig up gold like potatoes is all but literally realised in these recent discoveries, which give the enormous yield of 120*l.* per ton of quartz at a depth of 50 ft., and 3*l.* on the surface; whilst their extent is practically unlimited.

**NEW SPECTRA IN THE HOLLOW PROCESS.**—In the paper on the Hollow Process read before the British Association reference was made to some interesting spectroscopic observations taken by Dr. W. M. Watts, who states that in the experiments at Penistone two spectra were observed; the first, that given by the flame from the charging-door of the cupola in which the pyrites was melted; the second, produced by the blast of air through the molten protosulphide in the converter. The cupola-spectrum was shown by direct comparison with the spectrum of a flame coloured by lead chloride to be mainly due to oxide of lead, but contained besides some few of the lines which appear to be proper to the converter-spectrum. Analysis showed that the lead present in the ore was almost entirely volatilised during the preliminary melting of the ore, the molten protosulphide charged into the converter containing only 0.8 per cent. lead. The converter flame gives a brilliant spectrum extending from the lithium line somewhat beyond the thallium line, which is usually present. Its most marked feature is the presence of four bright red lines about equally spaced between the sodium and lithium lines and which are not those of any known spectrum. The way in which the flame is obtained suggests the theory that they are sulphur lines. The spark with a Leyden jar in a current of sulphur dioxide at the ordinary pressure yields a spectrum (at present under investigation) apparently not previously described, in which, however, the red lines are altogether different from those of the converter-spectrum. The constancy with which these four red lines are associated together seems to preclude the possibility of their being due to different substances, otherwise the most refrangible line might be due to lead. No lines of copper were observed except in the fourth experiment, in which all the lines except those of sodium disappeared about six minutes before the turn down. When in this experiment, towards the end of the blow, the subsulphide of copper began to burn, a splendid emerald green flame suddenly appeared, and all the lines except those of copper and sodium left the spectrum. During the last few minutes of the blow the mouth of the converter was dull and without flame, the sulphur and oxidisable matter having been burnt out.

**FIRELESS LOCOMOTIVES.**—At the British Association meeting, on Thursday, Mr. C. Beagerson read a paper on Leon Franck's Fireless Locomotive. The idea of such a locomotive was originated at the time of the horse plague in New Orleans in 1872. After the Franco-German War, M. Franck, who was connected with the Paris tramways, gave his attention to discovering a motive-power for his tramways. The object he had in view was to obtain such heat from water as would supply the motive power he needed. The engine in question was the result of his investigations. It had a large cylindrical reservoir, surmounted by a steel dome, two cylinders acting with piston rods, and a crank carrying two driving wheels, which were connected with other two wheels. The reservoir holds more than 700 gals. of water, heated to such an extent as to produce a pressure of 224 lbs. to the square inch. It is claimed for the new engines that they were very economical in every respect. It was pointed out that the engine would be especially useful on the metropolitan lines, as it neither gave off smoke nor deleterious gases. In a few weeks an engine of this character would be used on the tramway at Leeds, and another at Liverpool Docks.—Mr. W. H. Barlow said there were elements in this engine worthy of the most careful consideration. If it were possible to get a fuelless engine a very important object would be gained, especially on those lines on which there were a number of tunnels.—Capt. D. Galton said he had seen the engine in question at work in Paris, and it had most favourably impressed him. The engine was largely used in the French plantations in the West Indies. There could be no question that all our tramways would be worked by steam very soon. Parliament had introduced difficulties, for Parliament always introduced difficulties. However, they were being met, and when the use of steam was sanctioned on tramways, such engines as the one just described would be largely used.—Mr. J. Topham said that there was an increased demand for the haulage of tramways by steam, and the great desideratum needed was cheapness. Such a power ought to be produced at a cost of

about 6*d.* per hour.—Mr. A. McDonnell thought that an engine such as the one described would be a great advantage on short lines of railway, both from an economical and an efficient point of view. The Chairman hoped that in the engine before them they had a solution of the difficulty of cost, the great cost having already stood so much in the way of the adoption of the principle.

#### REPORT FROM CORNWALL.

Aug. 28.—There is little change to notice in the aspect of mining affairs in the county from the date of our last report. The mining share market has been very active, in some cases exaggeratedly so, and in these it has naturally suffered a slight reaction, but it continues firm, and the advantage gained by the advance in the tin standard is thoroughly well maintained. Stocks in Cornwall are said to be small, and it is a fact worth noting that our tin has again returned to its old and, as we think, proper place—at the head of the market. Of course, in London stocks are still large, but the gradually increased improvement in trade, of which signs are being steadily wafted to us from the other side of the Atlantic, will not only soon keep them steady, but with them low our smelters must either have been wholly misled as to the prospects of the market, or they must have kept their real opinions to themselves, for certainly nothing that has come from them of late—and there have been two or three semi-official utterances—indicated any belief in what has taken place. Probably in the present condition of tin mining outsiders are quite as well qualified to form an opinion as they, one factor in the calculation excepted—the stocks held in the county, on which it is always very difficult to get an idea that has any pretensions to real accuracy. Even as the advance now stands it will be a great boon to the county, not only increasing present dividends, and enabling several now losing mines to clear their debts and putting a few others on the Dividend List. However, we hope much more.

It is quite comforting, from the local point of view, whatever it may be from the national, to find that Cyprus will be no rival. Mr. J. H. Collins, F.G.S., to whom Cornwall is so much indebted, read a paper at the annual meeting of the Mineralogical Society at Sheffield on the "Mineralogical character and products of Cyprus." A friend of his lately visited Cyprus, and examined the mineral deposits in the different parts of the island. He had been able to compare the specimens sent home with the list of minerals published some time ago. Having heard so much of the mineral riches of Cyprus he was astonished to find, not only how poor the specimens were, but how very few minerals were now to be found in the island. The list of these drawn up numbered 22, and perhaps if the number were doubled a correct idea of the quantity would be arrived at. Cornwall alone had yielded 230 different minerals, and they would not be disposed, therefore, to imagine that the island was rich in mineral treasures. With regard to the commercial value of the ores which had come to hand, it was quite evident that there was a very large quantity of copper ore in two or three districts. But in regard to the samples sent, it was difficult to get anything with more than 3 or 4 per cent. of copper. A few small specimens reached from 12 to 14 per cent., but the bulk seemed to be exceedingly poor, and the great wonder was how the natives of Cyprus in former times were able to work the minerals at all. At that time they must have had forests which do not now exist; the ores were of a very free nature, and would smelt readily; and perhaps with fuel on the spot, and forced or very cheap labour, a little copper would very likely have been got from the ore. But it was clear that the ores to be obtained would not be likely to enter into competition with those from Chili, South Africa, Australia, and Cornwall. In the face of this one is inclined to ask whether the old idea of the mineral riches of Cyprus be not one of those errors that modern times have to dispel. Was Cyprus ever so productive as has been said?

The Vice-Warden of the Stannaries has settled Mr. Brydges Williams as a contributor to the Teign Valley Mine after an examination of Mr. N. T. Head, who had kept the letters bearing upon the transaction, but from whose memory the details had passed as completely as they had from Mr. Williams'. The point of contention was really small, and of no material consequence to Mr. Williams, and now the case has been decided we see how completely it is possible in these busy days for a man of business to forget the particulars of one transaction out of his multifarious engagements. Had Mr. Head not preserved the letters the point could never have been settled by anybody.

The exhibition of the Royal Cornwall Polytechnic Society opens next week, and is said to be likely to be a good one, and quite up to the average. The Miners' Association will hold their annual meeting at the same time and place.

#### REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Aug. 28.—The coal trade of South Staffordshire is in a better position than for some time past. Orders for manufacturing fuel from the mills and forges are arriving with more freedom, and prices may by-and-by suffer a rise. This will not, however, be yet awhile, much as an advance on actual selling rates is needed by the collieries. Prospects as to furnace coal are brighter, for there are indications in one or two parts of the district that the production of raw iron will soon be increased. Domestic fuel is being bought in encouraging lots, holders plainly wishing to supply themselves before quotations, as they always do when autumn sets in, advance. Pig-iron makers report this week that the improvement noted in my last report is fully maintained. Some large lots have recently changed hands, but stocks at the blast furnaces still remain heavy. Prices of all descriptions are firmer, and an advance of from 1*s.* 3*d.* to 2*s.* 6*d.* has taken place in some high-class irons, both native and foreign. Finished iron is increasingly active. The sheet makers have booked orders from the galvanisers that will take them from six to eight weeks to execute, and they are demanding advanced rates. Those instances are, however, exceptional in which the advance is secured. The galvanisers on their part are quite firm at the advance of last week for sheets, and some of them refuse to book more contracts at under 25*s.* per ton rise upon the late minimum. Here and there a 30*s.* rise is asked. A meeting of manufacturers is about to be held, at which a second declared rise of 1*l.* a ton will in all probability be determined upon. American orders are imparting considerable life to the trade. Both in North and South Staffordshire several 1000 ton lots of hoops for cotton bailing purposes have been given out, and the Earl of Dudley's Round Oak Works are turning out horseshoe iron for the United States.

At the close of to-day's market in Birmingham best English spelter was quoted 19*l.* 10*s.* Good English was, however, to be had at 19*l.* 2*s.* 6*d.* Galvanised corrugated sheets were mostly firm at last week's rates, only small quantities for quick delivery could have been got at the rise of 20*s.* Speculative enquiries for pigs and best sheets were numerous, but buyers were rarely prepared to give advanced rates.

A fruitful topic of conversation in trade circles this week has been the circumstances which have come to light in the annual report of the Patent Shaft and Axletree Company (Limited), of Wednesbury, a summary of which is appended. Much astonishment has been generally created at Mr. Coath's defalcations, especially at Walsall, where he resided, and assumed some position. The shares of the company are now quoted by sellers at 7*d.*, but there are no buyers at this figure. The report alluded to discloses extensive losses consequent upon frauds by the late cashier, Mr. William Coath. It is stated that he recently absconded, previously obtaining a passport which would carry him beyond the reach of the law. An examination of his books show that in addition to robbing the company of large amounts he systematically falsified the accounts, thereby inducing the directors to pay dividends not earned. In consequence a large deficiency is now shown. The year's trading has resulted in an apparent loss of over 27,000*l.*, much being due to exceptional charges which will not recur. There is every prospect of the business being safely and profitably carried on, even under the present depressing circumstances, whilst any revival of trade must result

at once in a substantial improvement. The accountants state that last year's accounts were largely fictitious, the reserve fund of 69,000*l.* and balance of profit (8000*l.*) having no existence, whilst there was a deficiency of nearly 17,000*l.* The accounts have for years been purposely falsified. Workmen's wages were systematically abstracted, and the defalcations concealed by an ingenious manipulation of figures in the books. Some books are missing, therefore it would be difficult now to trace the actual total of these defalcations, but they had been going on for years. The deficiency account amounts to 78,000*l.*, including defalcations by the late cashier last year amounting to over 9000*l.*, and 12,000*l.* is allotted to bad debts. The registered capital is 950,000*l.*, of which 665,000*l.* is called up. For several years the concern paid a dividend of 15 per cent.

A meeting of the Oldbury Railway Carriage Works Company was held on Monday. The report showed that, after deducting the interim dividend on the preference shares, there was a loss for the year of 2896*l.* 16*s.* Under these circumstances the directors did not recommend that any dividend should be paid upon the ordinary shares, but that the usual dividend be paid upon the preference shares out of the reserve fund. A discussion took place, in course of which attention was directed to the directors' travelling expenses, which were considered to be too large. Upon a resolution being proposed that a dividend of 6 per cent. be paid to preference shareholders out of the reserve fund, Mr. J. Smith moved an amendment that no dividend be paid, urging that it was illegal to pay such dividend except out of the profits of the company. The amendment, however, was negatived, and the original resolution carried.

The tenth general meeting of the Sandwell Park Colliery Company (Limited) was held on Tuesday. The report was a very satisfactory one, showing a profit of 6355*l.* 5*s.* 2*d.* on the year, besides which 2000*l.* was deducted for depreciation. A dividend of 5 per cent. was declared, and the most sanguine anticipations were expressed as to the speedy success of the company, which is now working about 600 acres of thick coal.

The miners' strike in North Staffordshire is extending. The notices at several pits are expiring, and the men are joining those on strike. The employers at the Mill Bank Collieries, Silverdale, offered to reduce by one-half the percentage of the reduction, but to this the men would not agree.

Mr. Charles Wells, ironmaster, Moxley, has joined the board of the Staffordshire Joint-Stock Bank (Limited), to fill the vacancy caused by the death of Mr. William Hatton.

The Midland Steam Boiler Inspection and Assurance Company's annual meeting was held at the offices, Wolverhampton, on Wednesday, under the presidency of Mr. Walter Williams. The directors' report showed that the business of the company had suffered during the year from the increased depression in trade. The total number of boilers under the care of the company was 2089 in the southern district and 1129 in the northern district, making a total of 3218, which was a decrease of 197 as compared with last year. The directors had no doubt, however, that when trade improved this decrease would soon be made up. The amount paid for compensation during the year had been exceptionally great, owing chiefly to accidents occurring which involved the payment of large sums. The number of explosion-had scarcely exceeded the usual average. None of them had been attended with fatal consequences, and, with two exceptions, the amount of damage had been of an unimportant character. The balance of profit on the year's trading had amounted to 434*l.* 12*s.* 3*d.*, and the directors recommended payment of a dividend of 3*s.* per share, which would require a sum of 28*l.* 12*s.* 3*d.* to be taken from the reserve fund. This would then leave the fund at 4682*l.* 11*s.* 5*d.* The report was adopted, and the dividend as recommended ordered to be paid.

#### REPORT FROM DERBYSHIRE AND YORKSHIRE.

Aug. 28.—No change of any consequence has taken place in trade generally in Derbyshire, but, as is the case in nearly all parts of the kingdom, there is a strong feeling that the season of depression is gradually passing away, and that the worst has been surmounted. In the lead district there has been nothing new to report, and lead mining appears to be about the last of our industries that is likely to be affected by the improvement which has set in. The price of lead for some time past has been unremunerative, but with the marked decline in our imports prices must inevitably rise, so that we may expect to see many of the mines now standing again in full operation; but to ensure this there will have to be some abatement made in the royalties paid, as well as in the rates and in the mode of assessment at many places. There are some few ironstone mines kept going, but the quantity of ore raised is probably not much more than half of what it was a few years ago, as the Northamptonshire field is looked to more than the one at home. Of late there has been a better enquiry for Derbyshire pig for Staffordshire and other districts, but as yet there has been no quotable advance in prices, although in some instances no doubt a slight rise has taken place. Bars and other descriptions of manufactured iron have also been more enquired for of late, more especially for Sheffield and the district around it. Bessemer rails have in no way fallen off at the one place in the county where they are made. Considering that we are still inside the month of August, the business doing in house coal is fully equal to what could be expected under the most favourable circumstances, but unfortunately prices do not go up, so that those who are making a little profit may be considered well off. The London trade has kept up very well for the time of year, and large quantities of Silkestone and other qualities continue to be sent over the Midland to St. Pancras and the depôts. Steam coal has not been at all brisk during the summer, when the consumption is the heaviest, and the exports the largest, and the consequence is that it has been sold at a less price than previously. There are still a good many men walking about, but before long it is expected that all will be at work.

On all hands it has been admitted that trade in Sheffield is in a much healthier state than it has been for a very long time, and there is every prospect that this state of things will continue up to the close of the year at least. The fact of an order for 15,000 tons of Bessemer rails having been given to one firm in the town on Canadian account has been published far and near, and this it is understood will shortly be supplemented by further orders of something like the same magnitude. Our Bessemer mills are, therefore, likely to have a brisk season, which, of course, will be shared in by ironmasters engaged in the production of hematite pig. Steel for other purposes, it may also be said, is in better request, and considerable quantities of plates made from it are now being absorbed by boiler-makers and shipbuilders. Ordinary plates and sheets, however, are in tolerably fair request, and there is a fair output of hoop iron. Some little improvement has taken place in the demand for the best qualities of cutlery; but there are still a good many persons in the different branches connected with its production anything but fully employed. Edge tools, sheep-shears, and other products for the Australian and other colonial markets have been in better request, whilst two or three of the file establishments have recently had some good orders, giving more employment to their hands. At one of the principal collieries in the district there has been some interruption to work owing to the wages question, but in the present state of trade disputes are not likely to be of long duration.

The Stanhope Silkestone Colliery, near Barnsley, after being closed for several months, owing to the company having gone into liquidation, is about to be worked again by the mortgagee and original proprietor, Mr. Howarth. The colliery has been in the hands of two companies, both of which have failed.

In the South Yorkshire district the Coal Trade is decidedly better, and the men more fully employed than for some time past, in some few instances there being six days a week, and in others five days. But this does not in any way affect the price of coal, which is such that owners say they are unable to make any profit whatever. There are still, however, a considerable number of men out of work, but for which they are not responsible. This should be about the busiest time of the year for the shipment of steam coal from the Humber to the North of Europe, but of late there has been a falling off in

the quantity sent to Grimsby, which is the principal outlet for coal of that description from the South Yorkshire district, while it is not likely that the Baltic will be open for more than six or seven weeks from this time, so the season is not likely to be so good as some previous ones. A superior quality of coke suitable for smelting is now being produced, and meets with a rather ready sale, and is, probably, about the only thing that pays in connection with coal.

The leaders of the Miners' Association are obtaining signatures to a memorial to be presented to Parliament, praying for a Royal Commission to enquire into the charges made by certain railway companies for the conveyance of coal from the West Riding to Hull and London, and as to how far they act inimically to the interests of the working miners and others. The railways alluded to appear to be the Great Northern and the North Eastern.

On Friday last a large party of members and associates of the British Association visited the Phoenix Bessemer Works, Sheffield, belonging to Messrs. Steel, Tozer, and Hampton, when they had the opportunity of seeing the Bessemer process under the most favourable circumstances. There was a twilight exhibition of the system, together with a complete view of the splendid blowing engines. The visitors were much gratified at what they saw, which was handsomely expressed by the Marquis of Blandford. The compliment was responded to on the part of the firm by Mr. Tozer, who expressed that he and his colleagues felt honoured in receiving so large and distinguished a party at their works.

#### REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

Aug. 28.—The Monmouthshire Canal Company's half-yearly meeting was held to-day, Lord Tredegar in the chair. The guaranteed dividend at the rate of 6½ per cent. per annum on the ordinary stock was ordered to be paid, as well as 5 per cent. per annum on the preferential stock and shares. Only the Board of Trade's approval is required before the Talywain branch is opened.

The Mayor of Newport is deputed to present the Albert Medals to the brave rescuers in connection with the Abercarn explosion.

A sad and fatal accident has occurred at a colliery situated at Dylais, Neath. Two men have been killed while descending the shaft, and a third was so injured that he died a few hours afterwards. The cage appears to have tilted over suddenly, hence the fatality. No blame appears to attach to any of the officials.

The Iron Trade of the district is comparatively unchanged, but there are still gratifying items of intelligence floating about with reference to the improvement of the American demand. There are some fair orders in hand on this account. One of the difficulties of steel rail manufacturers in this district in times past has been the large accumulation of cuts and ends for which practically there has been no market. Strange to state, nearly all these scraps all over the country have been bought up of late by American speculators, who, it appears, can import the same into the United States as raw material without paying the heavy duties that are imposed on manufactured iron. Old disused iron rails have been largely purchased on American account, and what was quoted at 2*l.* 5*s.* per ton three months ago cannot now be obtained under an advance of 10*s.* to 15*s.* per ton. The clearances of iron during the past week have been large, and principally to India, the United States, Brazil, and Sweden. The demand for iron rails is evidently improving, while that for Bessemer steel rails is scarcely up to the mark. A new proprietorship has been formed, who will carry on the ancient Tintern Wireworks. The firm will be called "The Abbey Tintern Wire Company." It is said that the manufacture of wire by mills was first established here by Germans in 1596. The re-starting of these works is another proof of the revival of trade. The bar-iron department shows a slight improvement. As for the Tin-plate Trade disturbed relations between masters and men seem likely to ensue. In the Llanelly district the men threaten to go out "on strike" if the reduction in wages is enforced. On the other hand, the men generally seem inclined to confer with the masters on the matter. Meanwhile trade is rather sluggish.

As for the coal trade, there is certainly more activity observable. At many of the collieries there is more doing, and almost every pit in the Rhondda is in full employ, except the Dinas, where a dispute still exists. The enquiry for steam coals is improving, and shipments have been a trifle larger. Prices are said to have shown a slightly upward tendency. House coals are materially unchanged, either so far as the demand or prices are concerned. Patent fuel is dull. The Llantwit seam of house coal, 2*ft.* thick, has been won at Caerphilly. The men at the Rhos Llantwit Colliery have resumed work. Two colliers have been summoned for leaving their employment at the Pentre Colliery. The sum of 10*l.* was claimed by the company as damages. The case was a test one as to 500 men on strike. There was a cross-summons against the company for alleged breach of contract. The men allege that the wages on separate items had been reduced instead of on gross earnings. The men, it was arranged, should resume work, pending the magistrates' decision as to what reduction shall be made in wages.

#### REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Aug. 28.—There is a prospect of a little railway extension in Cardiganshire. Mr. David Davies, M.P., has offered to contribute half the expense, or 15,000*l.*, towards the construction of a narrow-gauge railway from Llanilar, on the Manchester and Milford Railway, to Aberaeron on the coast; and Mr. Gwynne, of Monachty, offers another 5000*l.*—leaving only 10,000*l.* to be subscribed locally. Such a line will be a valuable acquisition to the district, and, albeit the present movement may be partly due to political considerations, I hope it may be carried to a successful issue. Could not the wealthy member for the Cardigan Boroughs help in carrying a tramway from about the same point through the heart of the Cardiganshire mining district? Now, this would be a good work, and not unprofitable withal.

Lord G. Hamilton repents himself somewhat of his hasty and sneering utterances in the recent debate on the subject of Higher Education in Wales. In a letter to Mr. Puleston, M.P., he promises to think the matter over between now and next session, and hopes that it may be possible to do something for Wales. Poor Wales! Possible to do something for her after so much of her tithes and so many of her endowments have been fished, especially from Cardigan, for the enrichment of English colleges? I should hope more, however, from the united and determined action of the Welsh Members of Parliament and of English Members resident or taking an interest in Wales than from Lord George's thoughts.

This is the season of excursions which are made by the local scientific societies. The Cardiac Society has been visiting the Silurian strata of Welshpool; the Wrexham Society the carboniferous limestone at Llangollen; the Chester Society the interesting limestone mining district of Halkey Mountain; and the Oswestry the carboniferous limestones of Chirk. What one regrets in these excursions is the absence of interest in minerals and in mining operations, and the practical outcome is small. But they are pleasant reunions.

It would be a capital thing if, as I suggested once before, there could be a series of field lectures on mining in the midst of our chief mining districts. The absence of practical wisdom and suggestions is also to be regretted in the midst of the considerable correspondence there is in the the Journal relating to North Wales. I refer especially to the letters on the Llanarmon district, and those on the Cardiganshire mines. How interesting it would be, for example, if in the former case we were told the exact position of the "flats" in relation to the enclosing strata, whether they are formed in thin shale beds or in decomposed limestone or other rock, the dimensions of some of the principal of them, the proportion of metallic ore to the whole mineral contents of the flats, the relation of the flats to true lodes, the quantity of lead ore extracted from a given space of flat or lode, with information on other similar points of interest. Then these various points might be illustrated by reference to particular mines. Then, with respect to Cardiganshire, it would be desirable to lay for awhile the ghosts of Messrs. Middleton and Bushel, and even to forget the glory of the past, and to give us a description of the bearing, width, earthy and metallic contents,

and variations of particular lodes, and in both cases some reference to costs and results would be very acceptable. In this way we should give to our mining literature a definiteness which I think it must be confessed it lacks at present.

It is due to Mr. Knapp to say that I have been under the impression that his name was attached to the letter signed "Cymro," that appeared on June 21, and I regret the oversight. It is also due to myself to say that I feel very far removed indeed from "whining" or "wincing" under the accumulated roll of his very long and uncomplimentary adjectives. He overdoes his belabouring. Would he now answer the enquiries made in my report of June 14?

The workmen at the Coedmawr Pool Lead Mines were well entertained on the occasion of the renewal of operations on a larger scale, and I wish for it and for every neighbouring mine all the success its owners can desire.

#### WATSON BROTHERS' MINING CIRCULAR.

WATSON BROTHERS,

MINEOWNERS, STOCK AND SHARE DEALERS, &c.,  
1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

In speculative language the "Bull" is he who buys for a rise in price, and the "Bear" is one who sells (what he has not got) for a fall; this is the chief occupation on what is called the share market, and the fluctuations in shares caused by it are very puzzling to outsiders; indeed, we might add they do much to deter the general public from embarking in mines at all. They see one day a share quoted 5*l.*, and they buy; next day they are told the mine looks better, but shares are down to 4*l.*, which seems an utter contradiction, but may, nevertheless, be true. A discovery is made in a particular mine; *bona fide* buyers appear and pay for all the shares they purchase. The speculating "Bull" also buys largely in hopes of the price rising, so that he may sell before pay days (once a fortnight), and put a good profit in his pocket. The "Bear" does all he can to prevent this, for having sold to the "bull" (say) at 5*l.*, if he can knock them down to 4*l.* before the account he buys in or makes up for what he sold a "bear," and clears 1*l.* per share profit. If the "bull" fails to take up his stock on pay-day, has to sell, or to "carry over," the bear gets the benefit, and bangs the market to his heart's content. The favourite way of doing this is to watch when there are no buyers present, then offer shares in large lots, knock down prices, and get the lower quotations in the newspapers. This frightens many real holders of stock, who rush into the market to sell, and fall into the trap laid for them. On the other hand, the "bull," the holder, or speculator for a rise, is just as much interested in keeping up quotations, and in a measure one may counteract the other.

It comes, therefore, to this—look to the merits of the mines themselves, and not to the fluctuations in shares. Any mine in Cornwall, Devon, or Wales can be inspected and its true position known at a trifling expense, and this cannot be said of foreign mines.

We believe we shall be borne out by all who have lately inspected Wheal Crebor that the discovery there is one of the most important which has taken place in the county since the discovery of Devon Great Consols, and it is one that will greatly benefit the mining interest, as well as bring business to the market, still it has been persistently attacked and "beared." When the lode was suddenly cut rich there was a rush into the market, and shares which had been unsaleable at 4*s.* rose to 1*l.*, then after a time to 4*l.*, to be as quickly knocked down by the "bears" to 2*l.*, to the disgust of those who had given 4*l.*, and many sold out who had been told, doubtless, that the ore was *mundic*, and not copper at all.

Now, since this discovery took place in the new ground at Crebor we have bought for investment for clients and friends, and have paid for nearly 2000 shares (after having previously sold over 2000 at 2*s.*); we are, therefore, "bulls"—not speculative but *genuine* "bulls," and we admit equally as interested in keeping up the price of shares for ourselves and for those who have bought so largely, though not for speculation merely but for investment.

We have kept the discovery and its importance before our readers, and anyone by having the mine inspected could test it for themselves. Crebor adjoins Devon Great Consols, and returned over 150,000*l.* before the latter mine was discovered. When the ore was first found at Devon Great Consols the mine was in 1000 shares of 1*l.* each. Soon after this (in 1845) we visited the mine, and published full particulars of it. The shares rose from 1*l.* to 800*l.* each, or 800,000*l.* for the mine, in little more than a year, and it has paid over a million sterling in dividends. We shall be happy and content if Crebor does 1-20th part of this, or even less. The mine is in 6000 shares, and even at 10*l.* per share, which they may soon reach (we are "bulls" mind), it would only be 60,000*l.* for the mine, now working in new and whole ground, and capable of making good profits before the year is out. We do not want to overwhelm the agent with correspondence, but we say to any *bona fide* holder who may become alarmed by any "bearish" reports, write to Captain Andrews at Wheal Crebor, Tavistock, for the true facts before acting either one way or the other.

We have more than once explained the "unit," and the mode of estimating the price of ore. If the smelters are giving 9*s.* per unit, and the produce of the ore is 7 per cent., multiply 7 by 9, and you get 63*s.*, or 3*l.* 3*s.*, as the price of the ore.

At a produce of 7 it takes 100 tons of ore to yield 7 tons of copper, and at 60*l.* per ton this is worth 420*l.* But the smelter, at 9*s.* per unit, gives the miner only 315*l.* There is room, therefore, for a rise in the standard even with copper at 60*l.* per ton only.

**SOUTH FRANCES.**—We understand that the idea of cutting down Pascoe's shaft has been abandoned. The question of doing so has been hanging over the mine and affecting the price of shares for months past, and was fully discussed at the late meeting. Had it been carried out the returns of tin would have been stopped for six months. As it will not be carried out shares ought to rise again. The mine has improved since the meeting, and the sale of tin this week, 23 tons, realised 37*l.* 15*s.* per ton, or an advance in price of 3*l.* 5*s.* per ton.

**SATURDAY, AUG. 23.**—Market closed.  
MONDAY, AUG. 25.—The demand to-day has been chiefly for Wheal Crebor and Leadhills. Crebor, 3 to 3½; Leadhills, 1½ to 2; Carn Brea, 27 to 29; Dolcoath, 27 to 29; Tincroft, 9 to 10; Peever, 9½ to 10½; South Frances, 6½ to 7; South Condurow, 11 to 12; Roman Gravel, 7½ to 8½; Van, 14½ to 15½; Great Laxey, 15½ to 16½; West Tolgus, 21 to 23; Grenville, 4½ to 5.

**TUESDAY, AUG. 26.**—Market quiet. Tin and lead shares steady. Carn Brea, 27 to 29; Dolcoath, 27 to 29; Peever, 9½ to 10½; West Frances, 5 to 5½; East Pool, 12½ to 13½; West Basnet, 4½ to 5½; South Frances, 6½ to 7½; South Condurow, 11 to 11½; Crebor, 3 to 3½; Herodfoot, 2½ to 3½; Roman Gravel, 7½ to 8½; Tankerville, 2½ to 3½; Van, 15 to 16; West Tolgus, 24 to 26; Parys Copper, 10*s.* to 12*s.*; Don Pedro, 10*s.* to 12*s.*; Richmond, 7½ to 7¾.

**WEDNESDAY, AUG. 27.**—Market for lead and copper shares firmer. Tin stocks steady, and the following are quotations for the day. Aberllyn, 10 to 12; Carn Brea, 27 to 29; Dolcoath, 27 to 29; East Pool, 12½ to 13½; East Van, ¾ to 1½; Great Laxey, 16 to 17; Herodfoot, 2½ to 3½; Leadhills, 1½ to 2; Mellanear, 3 to 3½; Marke Valley, 10*s.* to 12*s.* 6*d.*; Morfa Du, 10*s.* to 12*s.*; Parys Copper, 10*s.* to 12*s.*; Roman Gravel, 8 to 8½; South Condurow, 11½ to 11¾; South Frances, 6½ to 7½; Tankerville, 3 to 3½; Tincroft, 9 to 10; Van, 15 to 16; West Basnet, 4½ to 5½; West Frances, 4½ to 5½; West Tolgus, 24 to 26; Agar, 3½ to 4; Crebor, 3½ to 3¾; Grenville, 4½ to 5½; Peever, 9½ to 10½; Cape Copper, 27½ to 29½; Don Pedro, 8*s.* to 10*s.*; Eberhardt, 2 to 2½; Frontino, 1½ to 2½; Richmond, 7½ to 7¾.

**THURSDAY, AUG. 28.**—Market rather quiet, dealers busy with settlement, and prices about the same as yesterday.

**FRIDAY, AUG. 29.**—Market active for tin and lead shares. Wheal Crebor advanced to 4*l.*, buyers. Carn Brea, 27 to 29; Dolcoath, 27 to 29; South Frances, 6½ to 7½; Tincroft, 9½ to 10½; Peever, 9½ to 10½; West Frances, 4½ to 5½; South Condurow, 11½ to 11¾; Van, 15 to 16; Great Laxey, 15½ to 16½; Roman Gravel, 8½ to 9½; Crebor, 4 to 4½; West Tolgus, 28 to 28½; Tankerville, 3 to 3½; East Van, ¾ to 1½; Herodfoot, 2½ to 3½; Leadhills, 1½ to 2½; Mellanear, 3½ to 3¾; Parys Copper, 10*s.* to 12*s.* 6*d.*; Don Pedro, 10*s.* to 12*s.* 6*d.*; Richmond, 7½ to 7¾.

**MR. WILLIAM H. H. WATSON** is in a position to BUY or SELL, at market quotations, Shares in all the leading Mines of the day; also to recommend a few for a rise in price.  
Address: W. H. H. WATSON, 1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON, E.C.

## THE COLOMENDY COMPANY (LIMITED).

Incorporated under the Companies Acts, 1862 and 1867.  
Capital £20,000, in 4000 Shares of £5 each.

### FIRST ISSUE OF 2000 SHARES.

Payable £1 on application, £1 10s. on allotment, and the balance in calls as may be required.  
The Shares may, if desired, be fully paid up in advance of calls, receiving interest thereon at £5 per cent. per annum.

### DIRECTORS:

Subscribers to the Memorandum of Association, the first four of whom will act as Directors until the First General Meeting of the Company.

JAMES ASHWORTH, Esq., Engineer, Southport.  
JOHN ASHWORTH, Esq., Mine Surveyor, Manchester.  
FORSTER GREEN, Esq., Merchant, Belfast.  
CHARLES ELCOCK, Esq., Merchant, Belfast.  
THOMAS EMMOTT, Esq., Cotton Manufacturer, Oldham.  
B. A. DOBSON, Esq., Machinist, Bolton.  
GEO. W. TAYLOR, Esq., Accountant, Manchester.

### BANKERS.

THE NATIONAL PROVINCIAL BANK OF ENGLAND.

### SOLICITORS.

Messrs. GOFFEY and NORTH, Solicitors, 15, Lord street, Liverpool.

### AUDITORS.

Messrs. THOMAS, WADE, GUTHRIE, and CO., 12 and 14, Marsden-street, Manchester.

REGISTRY—MR. GEO. W. TAYLOR.

REGISTERED OFFICE—MOLD.

### PROSPECTUS.

This company is being formed for the purpose of purchasing, continuing, and extending the business of the Colomendy Brick, Tile, and Clay Company, Limited (hereinafter called the "Old Company"), carried on by them at Tyddyn, Glan Alyn, and Colomendy respectively, all situated near the town of Mold, North Wales.

The property comprises buildings, plant, machinery, stocks on hand, and three leases under which the lands used therefor and in connection therewith are held. The Old Company was registered in 1875, but out of the subscribed capital the proportion available for working purposes, after payment of vendor and expenditure on buildings and plant, being inadequate, additional moneys were borrowed, with unsatisfactory results; and it has, therefore, been deemed desirable that under and by means of a voluntary liquidation the entire property might be acquired by the new company as a going concern and as a whole.

The machinery and plant are modern and in working order, and as now arranged are capable of turning out 60,000 machine made bricks per week. A siding of about 300 yards in length connects the brickworks with the London and North-Western Railway, and the distance by road to Mold being only 1½ mile, the works are thus most favourably situated for readily placing their manufactures in the market. The holding is under a lease for 28 years from 24th June, 1875, at a rental of £18 per kiln of 1650 cubic feet, with a minimum of £44 per annum.

At Glan Alyn there is a large deposit of very pure silica with an admixture of fire-clay, largely used by iron and brass founders for lining cupolas, some of the leading engineers of the kingdom stating it to be far superior to any other sand in the market.

The present sales average 60 tons per week, but these might easily be increased to 120 tons, and the quantity proved is estimated as sufficient for about five years' working at this increased rate.

At Colomendy is a deposit of sand similar to that at Glan Alyn, but if anything of rather better quality, which has not been worked by the Old Company, as they were able to meet all their sales from Glan Alyn. It has, however, been proved by other parties, and must, without doubt, be considered a very valuable part of the company's property.

The sand both at Glan Alyn and Colomendy can be worked easily and cheaply, and the quantity at the latter place is amply large enough for far outlast the terms of the leases at any reasonable output—say, at 600 tons per week.

These two properties are held jointly under leases dated 22nd November, 1875, for a term of 21 years, from 1st July, 1875, at a royalty of 6d. per ton of 21 cwt. on the sand, with a minimum rent of £100 per annum.

By agreement dated 26th June, 1879, made between the Liquidators of the Old Company of the one part, and James Ashworth for and on behalf of the present company of the other part, it is provided that the purchase money for the whole of the property mentioned in paragraph 2 of this prospectus, with the goodwill, shall be £2750, to be paid partly in cash and partly in shares, as therein expressed.

A statement has been carefully prepared to show the results which may be confidently anticipated from the first six months of the company's trading.

From this it appears that, at a very low estimate, the sales at Tyddyn would amount to £1046 during the half-year, and those at Glan Alyn to £1080, making together £2126. Two contracts have been proposed with respectable parties, according to the terms of which the cost of producing and preparing for sale goods of the above value would be at Tyddyn £880, and at Glan Alyn £680, making together £1560, which would leave a gross profit of £566, and after deducting £236, for rent, management, and charges, there would be a net profit of about £330.

There is, however, but little doubt that in subsequent years the sales, and consequently the profits, may prove considerably in excess of these calculations.

As there are large stocks of bricks at Tyddyn and of sand at Glan Alyn ready for sale the company will be able to commence trading immediately on taking over the works, without any delay whatever.

The only contract or agreement entered into is that for the purchase referred to above, as dated June 26, 1879, made between the Liquidators of the Old Company of the one part, and James Ashworth, for and on behalf of the present company, of the other part.

**TAMAR SILVER-LEAD AND FLUOR-SPAR.**—Good progress is being made in this undertaking. The 27 and 37 are being extended south, the former into virgin ground, and on the course of the celebrated South Tamar lode, which returned over 1,000,000 worth of silver-lead. The ore being broken in the Tamar is rich in silver, yielding over 34 ozs. per ton.

**WEST PATREY—THE VALUABLE DISCOVERY.**—The manager, Mr. David Williams, M.E., writes under date August 28—"The 56 on the Craven Cross vein is 3 ft. wide, carrying a solid leader of galena 24 inches wide, and worth upwards of 6 tons per fathom. Some idea of the productiveness of the vein may be formed from the fact that with two holes we have blasted upwards of 8 tons of lead ore."

**CROOK BURN.**—The shaft at this mine is now sunk to a depth of 5½ fms. from surface, and has been chiefly in stiff clay until a few days ago the sinkers came upon rock, and from the position it is found lying it is quite certain that one of the veins expected to be met with is either in or very near to the shaft. There is no water yet met with to create any hindrance to the sinking. A good shed has been erected over the shaft top, a tramway is being laid down for the conveyance of stones, &c., for walling, and a contract is let for the erection of a lodging-house for miners, &c., and altogether the works are progressing in a satisfactory manner.

**GREEN HURTH.**—It will be observed from the agent's report, in the usual place, that a further improvement has taken place in the No. 1 vein at this mine going south, now worth 3 tons of ore per fathom. At the meeting of directors, held on the 26th inst., it was resolved (acting upon the agent's advice) to sink a main shaft from the surface some 20 to 30 fms. in advance of the present south fore-head. This shaft will be used both as a drawing and pumping shaft, and will enable the mine to be proved and worked in limestone below present work, and also deeper into the whinsill, which sill or rock has been proved to be very productive at a very short distance from the Green Hurth Mine.

**COMBARTIN.**—At a general meeting on Wednesday (Mr. F. Thomas in the chair), the balance-sheet, showing a balance of liabilities over assets of 60l. 6s. 4d., was submitted and passed, and a call of 1s. 6d. per share was made. The agents' report stated that the adit cross-cut is now about 10 fms. from Harri's lode, which it is expected will be reached in the next three months. The lode was very productive in the old mine during the former working, and the present adit level was commenced with a view to intersecting the lode in new and undeveloped ground. The caunter lode in the adit level driving north-west is 6 ft. wide, and of a most promising character, and the agents feel very confident that a good deposit of lead will be shortly met with. The winze sinking below the adit level is now down 8½ fms. The lode in the bottom of the winze is worth from 3 to 5 cwt. of very rich silver-lead ore per fathom; and for 9 in. high in the side of the winze the lode will yield more than ½ ton of the same class of ore per fathom. Some of the ore produces more than 500 ozs. of silver to the ton. As soon as the winze is down 10 or 12 fms. driving east and west will be commenced, and it is expected that a good pile of valuable ore will soon be raised. Altogether the prospects on this caunter lode are exceedingly encouraging, whilst there is still the main lode to be intersected by the adit cross-cut.

## DUNSLEY WHEAL PHOENIX TIN MINING COMPANY (LIMITED).

MESSRS. SKEWIS AND SON are instructed by the Liquidator TO SELL, AT AUCTION, in One Lot, on Tuesday, 2nd September, 1879, at Four o'clock in the afternoon, at Webb's Hotel, Liskeard, the undermentioned

### VALUABLE MINING MATERIALS AND PLANT.

With or without the SETTS, as may be determined at the time of Sale, viz.:—ONE 40 inch ROTARY WINDING AND PUMPING ENGINE, with 10 ton BOILER; 60 fathoms 10 inch pitwork; lot of 7 inch pumps; 75 fathoms 2½ inch round iron rods; 80 fathoms ¾ chain; new 12 head stamps axle; hammer driven iron lifters; balance bobs; shaft tackle; smiths' bellows; 70 fathoms 2½ inch tram iron, with a lot of other useful materials.

The sett is situated immediately between Phoenix United and Marke Valley Mines.

The whole may be viewed on application to Mr. J. J. SIMMONS, Phoenix United Mines, Liskeard.

Dated Langstone House, Bridestowe, 14th August, 1879.

## SANTANDER ZINC MINING COMPANY (LIMITED).

MESSRS. J. AND C. B. PARSONS WILL SELL, BY AUCTION, at the Auction Mart, Tokenhouse yard, London, E.C., on Tuesday, the 9th September, at Two o'clock, by order of the Liquidator, the

### LEAD MINES

Belonging to the above company, situated at RABAGO, near San Vicente, in the province of SANTANDER, SPAIN.

These mines have been worked for lead ore from 1874 to 1875. Nearly £10,000 has been expended in developing them. A powerful steam engine and machinery for dressing lead ore has been erected at a cost of over £2000. A good house is built on the property for the manager. Tools, weighing machine, furniture, rails, tram wagon, and various articles, valued at £350, will be included and offered in one lot.

This is a first class opportunity for any party who can command £4000 or £5000, as in the first cross-cut there is a large quantity of lead in sight, and about 100 tons underfoot in the stope. The gallery has been driven 300 yards on a lode 17 ft. wide towards the winze, where ore of 80 per cent. was found but could not be taken out for the great influx of water. Another 80 yards will cut the ore under the winze and drain the same.

A further outlay of about £300, for extra buddles and crusher will make the mine capable of bringing out a large quantity of dressed ore monthly, at a profit of £3 to £4 per ton.

A market has been found for any quantity of lead ore at San Sebastian; and owing to a decision of the Government, the French company's road adjoining the Rabago Mines can be used without paying any fees, reducing the cost of transport from 21s. per ton to 8s. 4d. per ton.

For further particulars apply to the auctioneers, 16, High Street, Bristol; or to the Liquidator, care of Messrs. FOX and WHITTUCK, Solicitors, 35, Corn Street, Bristol.

### IN LIQUIDATION.

## ROOKHOPE LEAD MINING COMPANY (LIMITED).

### LEASES AND PLANT of the

ROOKHOPE LEAD MINES, STANHOPE, DURHAM, comprising—ONE PORTABLE AND TWO STATIONARY ENGINES; WATER WHEELS; CRUSHERS; METAL PUMPS; CAGES; self-acting TRAMWAY, &c.; and all necessary MINING IMPLEMENTS.

MR. HERBERT H. FULLER is instructed TO OFFER the above FOR SALE, BY AUCTION, at the Mart, Tokenhouse-yard, City, on Wednesday, September 10th, at One o'clock precisely.

Particulars, with conditions of sale, can be obtained from Messrs. HANCOCK, SHARP, and HALES, Solicitors, 74, King William-street; from the Liquidators, 8, Austinfriars; and from the Auctioneer, 1, Queen Victoria-street, E.C.

### POSTPONEMENT OF SALE OF IMPORTANT SILVER-LEAD MINE.

TO BE SOLD, BY AUCTION, within Dowell's Rooms, No. 26, George-street Edinburgh, on Wednesday, the 8th October, 1879, at Two o'clock P.M., instead of 10th September, as formerly advertised, that—

### VALUABLE SILVER-LEAD MINE.

Situated in the ISLAND OF SARDINIA, called GIBBAS.

The sett, which is extensive, is within a mile of Porto Corallo, where the mineral is shipped in barges, and is distant about thirty miles from Cagliari, to which there is a good Government road. There is a full equipment of pumping, drawing, and dressing machinery on the mine.

### SHORT REPORT.

"Llanbadarn, Cardiganshire, 1st August, 1879. Having had charge of the Gibbas Mine during the campaign of 1877-8, and being well acquainted with the metalliferous features of the sett, I am of opinion that with a moderate outlay judiciously applied the mine will produce large and profitable returns of lead ore. (Signed) S. Y. DUNN.

For particulars, apply to Mr. JAMES MARTIN, C.A., 49, Castle-street, Edinburgh; or to Messrs. GILLESPIE and PATERSON, W.S., 81a, George-street, Edinburgh, Scotland.

### TO RAILWAY WAGON BUILDERS, COLLIERY PROPRIETORS, AND OTHERS.

### RE BAXENDALE AND HEALD.

TO BE SOLD, BY TENDER, THE WHOLE OF THE STORES, MATERIAL, WAGONS, REPAIRING CONTRACTS, WORKS, AND REPAIRING STATIONS, FIXED AND LOOSE PLANT AND TOOLS, as a going concern, or the WAGON MATERIAL, &c., for removal.

The principal works are situated at CHORLEY, LANCAIRE, and LLANTRISANT, SOUTH WALES, and the REPAIRING WORKS AND STATIONS are at NEWPORT, CARDIFF, GLOUCESTER, READING, PANTYFFYNN, SWANSEA, and BRITON FERRY. THE FIXED PLANT AND TOOLS comprise every appliance necessary for building railway wagons on the most economical scale, and the stores and material on hand are such as would enable any party taking the same to continue without much additional expense a valuable business connection. If the stores are not sold in one lot, Colliery Proprietors, Wagon Builders, Smiths, Wheelwrights, and others, would be able to obtain at less than cost articles and material which they are constantly using.

Printed detailed specification and any additional particulars will be furnished on application, and tenders are required to be sent to the Undersigned on or before the 12th September next.

An inspection of the whole can be made by applying at the works.

### RE SIMON LEACH.

TO BE SOLD, ALSO BY TENDER, THE WORKS AT CHORLEY, with PLANT, MATERIALS, STORES, &c., similar to the above, particulars of which will likewise be furnished on application to the Undersigned. Colliery Proprietors, and others, requiring new wagons to be built may, on furnishing specification, obtain tenders at an exceptionally low figure.

DAVIES AND BEE, 5, Winckley-street, Preston.

### COLLIERY PLANT.

HOWARD'S WEST HARTLEY COLLIERY, NETHERTON, NEAR MORPETH, NORTHUMBERLAND.

FOR SALE, THE PLANT, &c., of the above COLLIERY, consisting of—300 tons 75 lbs. D.H. IRON and STEEL RAILS, with CHAIRS, FISH-PLATES, POINTS, and CROSSINGS; 300 tons 15 lbs. BRIDGE and 28 lbs. EDGE RAILS; 400 CHALDRON WAGONS, wheels W.I. tyres; WINDING, PUMPING, and HAULING ENGINES; HORIZONTAL ENGINE, 15 in. cylinder; GUBAL PAN; sets of 16 in., 17 in., and 19 in. PUMPS, complete; 3 in., 5 in., 8 in. FLANGE and SOCKET PIPES; FOUR LOCOMOTIVE ENGINES; SIXTEEN BOILERS, double fire and egg-ended cylinder; COAL TUBS; STONE TIP WAGONS; 16 in. LATHE, and usual MATERIAL about a Colliery.

Apply to WEAR and COLLEY, 33, Broad Chare, Newcastle-upon-Tyne.

FOR SALE (on account of the death of the proprietor),—THE RHOS ANTHRACITE COLLIERY, LLANELLY, SOUTH WALES.

Connected with the Railway System of the country, and with the Ports of Swansea and Llanelly. This Colliery with the present low price of coal is worked at a fair profit. Also, the GORGOCH COLLIERY and BRICKWORKS. For particulars, apply to W. ROSSER, Esq., Civil and Mining Engineer, Llanelly, South Wales.

### TO COLLIERY PROPRIETORS AND OTHERS.

IN ORDER TO CLEAR OFF A LARGE QUANTITY of WAGON MATERIALS at less than COST PRICE, through the failure of Baxendale and Heald, and Simon Leach, both of Chorley, in the county of Lancashire, and Llantrisant, South Wales, wagon builders, PARTIES REQUIRING WAGONS will please furnish specification and apply for tenders to the undersigned. SMITHWORK, CASTINGS, BOLTS, NUTS, and other materials suitable for repairs, ON SALE.

Apply at the Works, or to the undersigned—DAVIES and BEE, Accountants, 5, Winckley-street, Preston.

TO BE LET, with immediate possession, and direct from the Proprietor, a VERY VALUABLE

### ANTHRACITE COLLIERY.

Situate in the Vale of Neath, Glamorganshire. The colliery is in thorough working order, and a new winning has just been effected very near to the levels mouth. The area of coal unworked is very extensive, and of excellent quality.

For further particulars, apply to Mr. T. B. ALLISON, Aberpergwm Estate Office, near Neath, Glamorganshire.

FOR SALE, A NEW 70 inch cylinder CORNISH BEAM PUMPING ENGINE, 10 ft. stroke in cylinder and 9 ft. in the shaft, with steam case, metallic piston, and wrought gudgeon. The false cover, perpendicular pipes, weigh posts, working and nozzle gear all fitted bright. A strong substantial well made engine, complete, including cast-iron casings for top and bottom nozzles with bright covers, holding down bolts and wrought-iron caps and bolts for connection to main rod.

Apply to WILLIAM'S FERRAR FOUNDRY COMPANY, Ferrarworthal, Cornwall.

Dated Jan. 29, 1879

### TO PARENTS AND GUARDIANS.

AN ELIGIBLE OPPORTUNITY is now offered for the SETTLEMENT of an ACTIVE YOUNG GENTLEMAN IN CANADA. He will be enabled to obtain his profession as a Solicitor in five, or if he be a Graduate in three years. Cost of living about £150. In the meantime he will have active work, and obtain a knowledge of the Dominion, which is destined to become one of the most prosperous of the Colonies. Premium, £100 sterling. HERBERT C. JONES.

39, Wellington street, Toronto.

Canada Land and Loan Agency.

DESIRABLE INVESTMENT.—The Advertiser is desirous of meeting with a few Gentlemen to CO-OPERATE in the FORMATION of a COMPANY TO WORK A COPPER and TIN MINE in unwrought ground in the RICHEST MINERAL DISTRICT OF CORNWALL, comprising lodes which have given profits in adjoining properties over two millions sterling. The maximum capital calculated to erect the machinery and sink into the mineral-bearing ground will not exceed £5000. It is confidently relied on that one-half of the amount will be sufficient to open up a rich mine. A syndicate of twelve, subscribing £100 each, will be adequate for the first six months' working, and give a substantial market value to the property.

Inspection courted, and further particulars of "F. G. S.," MINING JOURNAL Office, 26, Fleet street, London.

18 H.P. PORTABLE STEAM ENGINE with link motion reversing gear, ready for delivery; also gear to wind and pump. A 9-h.p. VERTICAL STEAM ENGINE, with link motion, reversing gear (winding drum if required). A 6-ft. PAN MORTAR MILL, VERTICAL ENGINE, and BOILER, with carriage and travelling wheels.

Apply to—BARROWS AND STEWART, ENGINEERS, BANBURY.

22 IN. AIR COMPRESSOR, on massive bed-plate, with slide bars, connecting rods, and crank. FOR SALE (CHEAP). Improved AIR COMPRESSING ENGINES, with 12 and 9 in. cylinders. Also PAIR OF 9 inch WINDING ENGINES complete, with 4 feet drum, geared 3 to 1.

Apply to—WARSOP AND HILL, ENGINEERS, NOTTINGHAM.

HORIZONTAL ENGINE, 15-horse power, strong, and well finished, with fly-wheel, wrought crank shaft 5 in. diameter, and massive box bed; suitable for winding or general purposes; quite new. Price £70.

HORIZONTAL ENGINE, 8 in. cylinder, beautiful and most improved design, new and complete, with pump and governor. £38.

ALEXANDER SMITH

ENGINEER DUDLEY WORCESTERSHIRE.

THE SANDYCROFT FOUNDRY AND ENGINE WORKS COMPANY (LIMITED), NEAR CHESTER

(Late the MOLD FOUNDRY COMPANY. Established 1838.)

### MAKERS OF

MINING MACHINERY, CORNISH PUMPING, WINDING, AND EVERY OTHER DESCRIPTION OF ENGINE.

PITWORK, BOILERS, FORGINGS,

WATER-WHEELS, ORE CRUSHING, STAMPING, AND DRESSING MACHINERY,

GOLD AND SILVER AMALGAMATING MACHINERY,

MINING TOOLS,

ROCK DRILLS, AIR COMPRESSING ENGINES, and all the necessary accessories for MACHINE BORING.

SPECIAL ATTENTION given to MACHINERY for FOREIGN MINES.

SECOND-HAND MINING MACHINERY FOR SALE.

LONDON AGENT:—MR. JOHN F. PEARSE,

6, QUEEN STREET PLACE, SOUTHWARK BRIDGE, E.C.

JAMES JULEFF AND SON, BLACK LEAD MUFFLES AND CLAY CRUCIBLE

MANUFACTURERS,

TREWIRGIE WORKS,

REDRUTH, CORNWALL.

### THE WEEK.

SATURDAY, AUG. 23.—Holiday. Stock Exchange closed. MONDAY.—Speculators for a rise in Erie shares were a good deal exercised in their minds to find the shares telegraphed from New York as low as 24½. They fell to 26 here, a price not seen for a considerable time. The 2nd Mortgage and the Five per cents. receded 1½, to 75½ and 74½ respectively. Atlantic shares were not affected by this great drop. Reading General closed 75 to 75½. Home railways were rather strong. Sheffield advanced 1½, to 75½; such is the fascination of a ½ per cent. dividend. Berwick were driven up again, and touched 133½. Hopes are entertained of "cornering" some "bears," but this is not at all likely. Mining shares were in good demand. Sellers of Wheel Crebor were able to get 34.

TUESDAY.—Erie went down further; the shares receded to 25½. Second Mortgage to 75½, and the Five per Cent. to 74. Reading General Bonds were also seriously affected, and dropped 1½, to 74. Business was almost suspended in home railways, the downpour of rain throughout the day checked any buying, but stocks were very little affected, and held up wonderfully well. Berwick, Brighton, A. Dover, A. and York, A. were almost the only ones that lost ground, and the fall hardly exceeded ½ in any case. Richmond, 7 to 7½; Eberhardt, 1½ to 2; Wheel Crebor, 3½ to 3½; Van, 14½ to 15½; Leadhills, 2 to 2½.

WEDNESDAY.—Rain poured down heavily all the day, but without materially affecting the prices of railways, neither did the traffic returns dishearten holders. In North-Western there has been a falling off of nearly 20,000, and over 14,000 in North-Eastern. In carrying over to day several stocks were in short supply, and "backs" had to be paid. There was something approaching to a collapse in American railway securities. Reading General dropped as much as 3½ (70 to 71). Erie Second and the Five per cent. closed 2½ lower. The shares fell to 24½. Illinois Central, 89½ to 90½. Atlantic First, 84 to 84½. Reading shares, 131½ to 131½. Penn. shares, 84½ to 84½. United States Rolling Stock, 14 to 14½.

THURSDAY.—Berwick were carried over this account at 133; in the middle of the month it was 130½. Brightons were then continued at 108½, now at 108. The making-up price of Erie Second and the Five per Cent. this time was 73½ and 72 respectively; last time it was 73½ and 71½. From being offered at 73 last evening the Seconds rose to 74 early in the course of the day. Reading General have fallen during the account from 75 to 71. A dividend of 1 per cent. was announced by the Great North of Scotland Railway. This time last year there was no distribution. There was a rally in railways of nearly 1 per cent. all round towards the close.

FRIDAY (Opening).—Several railways are quoted ex div. this morning, among them being with the current prices—Great Western, 89½ to 91; Midland, 124½ to 125½; North-Eastern, 132½; and North-Western, 137½ to 137½. Erie shares are 24½ to 25, and the Second Mortgage have rallied to 74½ to 75. Reading General (74) have recovered to 73½. Richmond, 7½ to 7½. Wheel Crebor 3½ to 3½. Don Pedro, 10s. to 12s. 6d. Rio Tinto, 4½ to 4½. Great Laxey, 14½. Nouveau Monde, 11 16ths to 13 16ths. United Mexican, 2½ to 2½. North British are strong, and up to 73. Brighton, A. 108½. Great Eastern, 54½ to 55. Two o'clock.—Prices have been particularly firm, but they have now eased down somewhat. Berwick have been 132½; they are now 131½ to 132. Great Eastern are only 54½ to 54½. Caledonian are 92½ (sellers), after having been 92½ buyers. Brighton, A. 107½ to 108. Dover, A. 108½ to 108½. Erie shares, 25 to 25½; Penn's, 42½ to 42½. In the mining market Wheel Crebor are especially active, and quoted 4 to 4½. Brown, Davis, and Co., 3½ to 4. Credit, A. ½ to ½. Eley, Brothers, 29 to 30. Hughes Locomotive, 9 to 9½. National Discount, 9½ to 9½. United Discount, 4½ to 4½. Four o'clock.—Egyptians left off dull. Unified, 46½. Preference, 71½ to 72. Daira Sanieh, 42½ to 42½. British have been 73½ to 73½, now offered at 72½. Erie, Second Mortgage, rallied to 75½. Great Eastern closed dull, at 54½, and Brighton, A. at 107½; Cardiff and Swansea Colliery, 10s. to 10s.; Chapel House, 1 to 1½; Newport Abercrombie, 4 to 3½; Bilson and Crump, 20s. to 20s. FERNAND H. KIRK.

BRISTOL MINING SCHOOL.—Two of the students of this school—Mr. C. H. Powell and Mr. J. E. Green—have obtained Royal Exhibitions in the last examinations of the Department of Science and Art; and two others—Mr. William Guest and Mr. H. J. Palmer—have obtained Studentships.

ROCK-SALT.—The greatest rock-salt station in the world is in Russia, not far from the city of Iletzkaja-Scajitta, in the government of Orenburg. The vein extends nearly 2 versts (less than 1½ mile) in length, and has been already bored to a depth of 272 ells, or about 250 yards, and the bottom has not been yet reached. The salt is thoroughly pure from chalk, clay, or any bitter ingredients. The quantity of salt there is estimated at 53,133,478,096 puds, about 948,812,108 tons 17 cwt. 16 lb. English.

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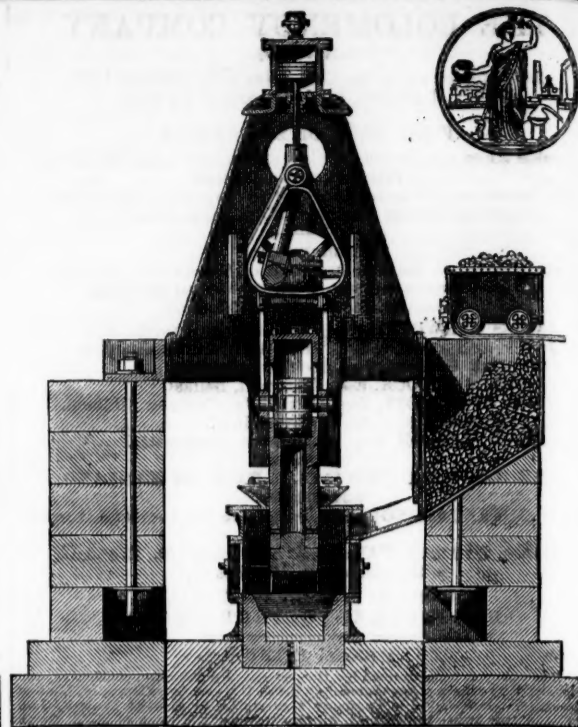
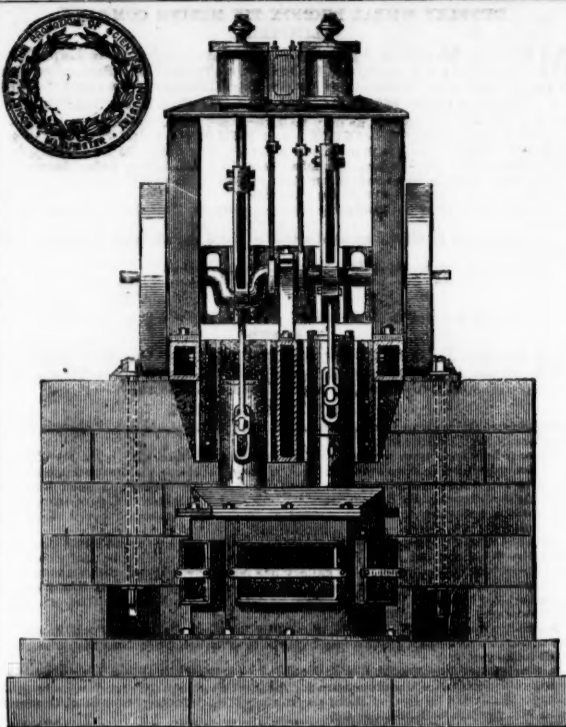
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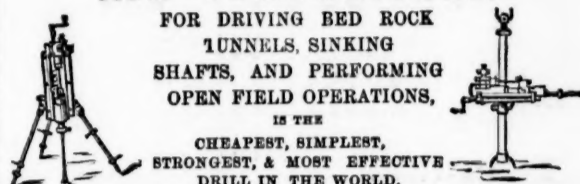


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